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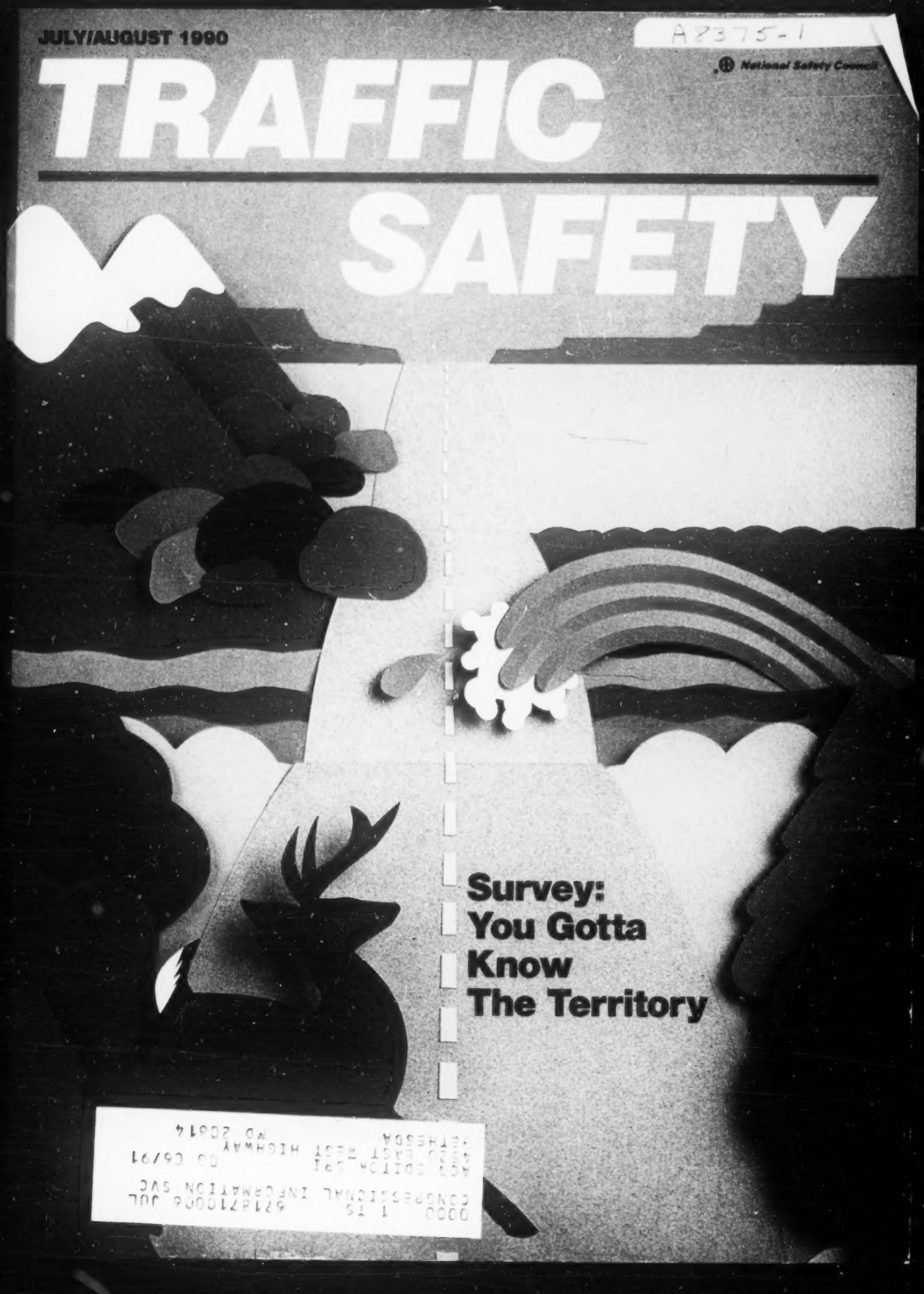
JULY/AUGUST 1990

National Safety Council

TRAFFIC SAFETY



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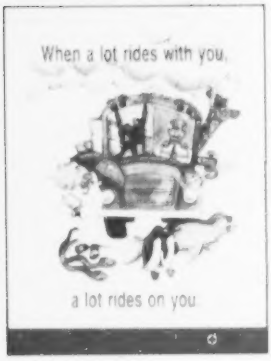

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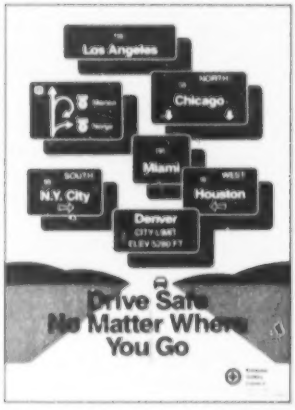

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July/August 1990

National Safety Council

TRAFFIC SAFETY

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Cash for Reporting Drunk Drivers

In an effort to beef-up its Drunkbusters program, the Alliance Against Intoxicated Motorists (AAIM) Schaumburg, Ill., is offering cash to anyone who reports a drunk driver on Illinois highways.

Callers receive $100 if the driver they report is later arrested by Illinois State Police and charged with driving under the influence. AAIM recommends that drivers look for the following warning signs of drunk driving: repeated drifting from lane to lane or on and off the road, tailgating, driving with headlights off at night, stopping suddenly or accelerating rapidly, turning too widely or narrowly, reckless speeding or using inappropriate turn signals.

Informants should note the suspect's license plate number, description of the car and its location and direction before calling the (*)999 number. The calls, which can only be made on a mobile phone, go through the Cellular Express line of the Illinois Department of Transportation and are free.

The program "now makes it possible for thousands of extra eyes to alert police about drunk drivers on Illinois highways," says Paul Froehlich, executive director of AAIM.

The photo shows the "AAIM Mobile," used for promotional activities.

Curbing Risky Teen Behavior

To stem the alarming number of automobile crashes and deaths caused by young drivers, an increasing number of states are using motor vehicle laws to clamp down on young people who abuse drugs and alcohol, according to the American Automobile Association.

The group's *1990 Digest of Motor Laws* found that 34 states and three Canadian provinces have enacted laws to regulate or postpone licenses for young people convicted of drug or alcohol offenses.

A new tool to measure risk-taking attitudes in youths may help educators change the dangerous behavior by counseling new and soon-to-be drivers found to be at risk. The *Young Driver Attitude Scale* was developed jointly by the AAA Foundation for Traffic Safety and Columbia University.

Automobile accidents account for nearly half of all deaths of 16- to 19-year olds. And teenagers are not only killing themselves, but are increasingly involved as drivers in crashes in which others are killed, according to studies.

The diagnostic 70-item questionnaire is broken down into seven areas commonly associated with risk-taking behavior: speeding, seat belts, safe driving, drinking and driving, riding with an unsafe driver, "myself" and concern for others.

The *Young Driver Attitude Scale* will be distributed to schools in the U.S. and Canada for driver and health education classes. For information, write to AAA Foundation for Traffic Safety, 1730 M St., N.W., Washington, D.C. 20036 or phone (202) 775-1456.

Help for the Handicapped

The U.S. Department of Transportation has proposed guidelines for states to adopt a uniform system of parking for the handicapped. The measure is designed to increase the safety and alleviate the parking problems of disabled people who travel between states.

The guidelines developed jointly by the Federal Highway Administration and the National Highway Traffic Safety Administration require that:

- The International Symbol of Access (i.e., a wheelchair) is the only recognized symbol for the identification of vehicles used to transport people with disabilities. This should be used on special license plates and removable windshield signs.
- States recognize license plates and handicap signs issued by other states and countries.
- States establish design and construction standards for parking spaces reserved for disabled people.

Safety for Seniors

Older drivers who participate in exercise, stress reduction and driver training programs can improve their driving skills, studies have found. As a result, an increasing number of groups nationwide are offering such programs to seniors.

Although age alone is a poor predictor of driving performance, the aging process causes changes in a person's vision, hearing, reaction time and decision-making ability, according to Thomas J. Carr, director of the safety and international department of the Motor Vehicle Manufacturers Association.

"55 Alive/Mature Driving" is a workshop sponsored by the American Association of Retired Persons (AARP) to help senior citizens improve their driving skills. For infor-

mation, contact AARP, 1909 K St., N.W., Washington, D.C. 20049.

Several state licensing facilities offer "Senior Service" days when older people are given more individual attention and don't have to stand in long lines.

Experts predict that as the older population continues to increase, so will the need for such programs.

Carr has these safety suggestions for older drivers:

- Make safety belt use a habit;
- Know the roads and ask passengers to help navigate;
- Don't mix medications and motoring;
- Avoid driving at dawn and dusk, the hardest times of the day to see objects clearly and judge distances accurately.

Rewarding Heroic Truckers

Goodyear has announced its 8th annual search for "America's outstanding heroic truck driver." A $20,000 U.S. Savings Bond will be awarded to the winner at a special ceremony during next year's Daytona 500 auto race in Daytona Beach, Fla. Runners-up receive a $5,000 U.S. Savings Bond.

Nominations for "heroic deeds or acts of unusual humanitarianism above and beyond the call of duty" that occur between Oct. 1, 1989, and Sept. 30, 1990, will be accepted through Oct. 15, according to Goodyear.

Last year's trucker-hero, Rick McFadden of Lexington, Ohio, rescued two motorists from a smoking, overturned car.

To qualify, drivers must work full-time (either for a truck line or as an independent driver) and operate a truck-trailer rig with at least 14 wheels.

Entry forms are available from: Highway Hero Award Nomination Headquarters, 2100-201 N. Woodward Ave., Bloomfield Hills, MI 48013.

Profile of a Drunk Driver

Traffic offenders jailed for drunk driving (DUI) differ substantially from other inmates, a recent AAA Foundation for Traffic Safety study found.

Seventy-five percent of jailed traffic offenders were arrested for drunk driving, the most frequent cause of arrest from 1975 to 1988. In 1988, there were 1.8 million DUI arrests, nearly double the number for 1975, according to FBI records.

The study, conducted by researchers of the criminal justice departments of Illinois State University and the Rochester Institute of Technology, found the typical jailed DUI offender, compared to other inmates, to be older, white, married, with dependents and employed full-time.

DUI offenders were more likely to have a criminal history of drinking or traffic offenses, but less likely than other inmates to have a history of more serious crimes. And they were less likely to have tried illegal drugs.

Safety experts are concerned about "repeat offenders, many of whom have serious alcohol abuse problems and have come into the justice system several times with no apparent impact on their alcohol abuse behavior," says Sam Yaksich, Jr., executive director of the AAA Foundation for Traffic Safety.

Researchers point out that the data under-represents young DUI offenders, because jail sentences are seldom given to first offenders, many of whom are young, "early-stage" abusers.

SHORTCUTS

Smart Cars En Route

The use of advanced technology to improve highway transportation and safety with "smart" cars received a major boost at the recent National Leadership Conference on Intelligent Vehicle-Highway Systems (IVHS) in Orlando, Fla.

Conference participants agreed to create a national organization to combine the efforts of the various groups in the public and private sector that work for highway safety. Such partnerships already exist in Europe and Japan.

"Smart" cars rely on state-of-the-art electronic equipment which guides the vehicles and warns of dangerous conditions.

The proposed national organization, for now dubbed the Electronic Highway Transportation Association of America (ELECTRANS), will be a non-profit scientific and educational corporation to advance the research, development, testing and implementation of IVHS technology.

Members will include businesses and trade associations from the private sector, government agencies, universities, international organizations, and interested public and private organizations. The target date for incorporation of ELECTRANS is December 1990.

Orlando Test Site

Agreement was reached at the May conference to use the rapidly developing area around Orlando, home to popular tourist attraction Disney World, as the test site for the new technology. Development of the $8 million program, called TravTek (travel technology), is already underway, with operations to begin in early 1992.

Cooperating in the comprehensive project are the U.S. Department of Transportation, the Florida Department of Transportation, the city of Orlando, the American Automobile Association and General Motors Corp., which is providing 100 specially equipped cars.

Objectives of the study are to determine the system's technical feasibility, user acceptance and reduction in travel times. Potential benefits are increased safety, fuel savings and improvements in air quality.

TravTek will provide electronic navigation assistance, real-time traffic information, route selection and other information, including special events in the Orlando area.

GM's role in the study is to be overall program manager and systems engineer. The firm will produce the vehicles with the necessary on-board navigation and communication devices such as electronic maps, symbolic displays and a synthesized voice system.

The American Automobile Association (AAA) is providing its data base of maps, events, hotels, restaurants and other information supplied on-line to drivers.

"TravTek will showcase our ability to provide that information and make driving a more pleasurable experience," says AAA president James B. Creal.

YOU GOTTA KNOW THE TERRITORY

Survey inquires about local conditions

CROSSING the Midwest or the Great Plains on the interstate system, a driver may get the feeling that every mile is just like the last one, only longer. Even in more scenic areas, highway design tends to be similar.

But traffic safety professionals in various parts of the country sometimes have to deal with miles that are unique.

• Capt. Lee Deno of the California Highway Patrol is shocked by the dozens of illegal aliens who have been killed trying to run across Interstate 805 and Interstate 5 after slipping across the nearby Mexican border. Smugglers hired to guide them often try to lead about a dozen at a time across the highway.

They walk in single file, anxious not to lose contact with the rest of the group.

"The first people to cross will look and see that it is reasonably safe and they will start running", notes Deno. "Usually it is the people at the end of the line that get struck and killed."

• In the desert Southwest, strangers frequently get into trouble on secondary roads during the summer rains. Surrounded by barren rocks and cacti, they don't realize that dips in the highway cross the bottoms of watercourses. If they're not alert, they could be in one of those arroyos when a flash flood with a wall of water eight feet high comes racing round the bend from a distant rainstorm.

• In Illinois, for some reason, metal coils have a way of falling off flatbed trucks and crushing cars. Charles McLean, Chicago area operations engineer for the Illinois Department of Transportation, says the Chicago area has a high number of such accidents because it's a center both for steel production and for trucking.

In your area, do you have unusual traffic safety problems involving any of these hazards (probably rare elsewhere)?	
HAZARDS	EXPLAIN
Pedestrians	
Animals	
Water	
Wind	
Special Vehicles	
Comments:	

TWO-WAY STREET

Steel coils weigh from 20,000 to 49,000 pounds. They're held down by chains. If the chains aren't in top condition and securely fastened, they readily break in a sudden stop and the coil keeps rolling.

• Deer also can be a serious hazard. Because they like forest edges and clearings, there are more deer now in many places than when the U.S. was one vast primeval forest. Michigan alone averages about five fatalities a year resulting from deer running across the road in front of a car.

The Michigan Department of Natural Resources says that several drivers lost control and hit a tree or rolled over in the ditch after swerving to avoid a deer. Others hit the deer first, then rolled over or hit a tree or another car.

Knowledge of such localized hazards can be beneficial for everyone. So TRAFFIC SAFETY invites you to report on any unusual traffic dangers in your area. We'll collect your answers and use them to alert the rest of the traffic safety community.

Comments Invited

Simply tear out the page and send it in. Or if you have to share your copy of TRAFFIC SAFETY with others, you may want to photocopy the page. Then, if we haven't provided enough space, you can write additional comments on the back.

Mail your responses to:
Managing Editor
TRAFFIC SAFETY Survey
National Safety Council
444 N. Michigan Ave.
Chicago, IL 60611

Home Free

Group makes offer drinkers shouldn't refuse

YOUR SURVEY asking about cooperation between public and private organizations prompts me to call attention to the service now being offered in Sacramento, Calif., with the cooperation of police, tavern keepers and taxi and tow truck operators.

We use teams of specially trained volunteer drivers (it takes two drivers per car) to cruise drinking places and offer to drive unsafe drivers home free in their own cars while our car follows. Our cars have two-way radios so they can be directed where needed.

The International Good Samaritans have a $300,000 three-year grant from the federal Office of Traffic Safety to develop the program in Sacramento. We also enjoy support from local businesses.

Since the program started in 1985 in the Lake Tahoe area, we have driven home safely 25,000 carloads of people. The hardest part was for our volunteers to convince people to accept a ride for the first time. But the bartenders began calling us to take care of the worst cases, people obviously in no shape to drive.

We're not saying don't drink; we're saying don't drive.

Thomas L. Argo
Executive Director
International Good Samaritans
Rancho Cordova,
Calif.

Bikes Belong on Roads

The bicycling community has been working for years to have bicycles recognized as vehicles by law. Recognized as such, they would be able to be ridden on virtually any road in the U.S.

I take strong exception to Stan Novak of St. Louis. His comments in the March/April issue of TRAFFIC SAFETY comparing the U.S. with Holland are like comparing a canoe with a yacht. The bicycle is important in both countries, but here it is a vehicle of recreation. For going to work, we prefer automobiles or public transportation. *(Novak praised the Dutch system of designated bike lanes.—Ed.)*

Quite frankly, my wife and I want to be able to ride our bikes anywhere we choose. Recently, we completed a trip through the Davis Mountains of Texas. We do not want to be assigned to a government "bike trail" designed at the whim of a non-rider.

Safety is best served by educating the public to accept the bicyclist as part of the road scene.

Ray Burket
President
Texas Traffic Safety Academy
Arlington, Tex.

Dream World

An editorial I read in the *Yakima Herald-Republic* bothers me some.

It noted that traffic-safety officials blame the 65 mph speed limit for fatalities when they increase. But when fatalities decrease, as they have in recent years, the paper sees a "double standard."

The paper quoted Jerry R. Curry, National Highway Traffic Safety Administrator: (The lower fatality rate)

Any Comments?

"Two-Way Street" is *your* forum; a place for ideas and opinions on issues important to traffic safety professionals as well as comments about articles in previous issues of TRAFFIC SAFETY.

Please address letters to "Two-Way Street," TRAFFIC SAFETY Magazine, 444 N. Michigan Ave., Chicago, IL 60611.

Letters may be edited for clarity or because of space.

"means that American motorists are less at risk than ever before. The reduction in traffic deaths during the 1980s reflects our national resolve against drunk driving, increased safety belt use and a generally heightened awareness of highway safety."

The *Herald-Republic* commented: "Let's at least take the onus off the speed limit increase. Now, even according to the government, it's all right to go faster as long as you're sober, pay attention and wear a seat belt."

The National Safety Council has its job cut out to sell American motorists on the hazards of 65 mph as we drive in soundproof living rooms on wheels down the freeway, in a dream world, surrounded by stereo music, thinking accidents always happen to someone else.

Ken Kohagen
Safety Officer
Yakima Transit
Yakima, Wash.

Survey Responses

More anecdotes from the grassroots in response to a questionnaire in our January/February issue about what's really happening with the features of modern cars:

- A person in our office was left hanging in her seat belt when the vehicle she was driving came to rest after a collision. She exited the car via the sun roof.
- At night after a party, a couple with 40 miles to go turned the driving over to the sober wife. She set the cruise control, then dozed off. Fortunately, she awoke as the vehicle left the road and recovered control before any damage occurred.
- A driver set the cruise control, fell asleep and plowed into a bridge.
- When a car with power locks caught fire, the driver had difficulty getting out.
- An air bag inflated when a motorist struck a deer. The car wound up in the ditch.
- At least one kind of tape deck has complicated controls that require close attention (a bad thing when drivers are supposed to be paying attention to where they're going).

Well-maintained, brightly reflective signs make this highway situation clear to drivers. At a time when the population is aging and most drivers just don't see as well as they used to, clear signage is more important than ever. (Photos by 3M).

Signs of Trouble

Local governments courting damages

BY HENRY WOLTMAN

Henry Woltman is Senior Specialist for Traffic Research in the Traffic Control Materials Laboratory at 3M. He received a BS degree in industrial engineering from the University of Minnesota in 1952 and joined 3M the same year.

He has been the author and principal investigator of many papers on the visibility of materials which have been published by the Transportation Research Board. He is a long-standing member of TRB and ITE. He is a member of the Signs Committee of the National Committee on Uniform Traffic Control Devices.

IF TWO 747 airliners crashed every week in this country, can you doubt for a second that investigations would be mounted, heads would roll and reforms instituted? The answer is obvious.

Yet, the passenger capacity of two 747s roughly equals the weekly cost in human lives of accidents on our nation's highways.

In addition to the 49,000 people killed every year in traffic mishaps, another 1.8 million people are injured, 150,000 of them permanently disabled. There is no room for doubt: we pay a high price in life and limb for mistakes, miscues and misunderstanding behind the wheel.

Of course, many researchers, engineers, public officials and volunteers

are hard at work on improving highway safety. The problem is not being ignored, but safety is not the stuff of high drama. Accidents that don't happen — because someone engineered a safe curve or placed an easy-to-read sign in the right place — don't make headlines.

The nature and condition of the roadway and the information provided by signs have always been key factors in getting safely from Point A to Point B, and concern for safety has traditionally driven research aimed at better roads and better signs.

No More Immunity

In recent years, however, traffic agencies have had to confront an additional reason to pay close attention to road conditions and the signs that alert drivers to them; the loss in the courts of "sovereign immunity." The term — from English common law — means, in effect, that "the king can do no wrong" and is therefore immune to any attempts by citizens to hold him responsible for negligent acts.

When kinging went out of style, republican forms of government nonetheless retained this convenient hedge against accountability. Now American courts are taking a different view. They are allowing tort claims to be brought against governments and their agents. (A tort is a civil wrong or injury, and American law generally allows a person to recover for injuries and property damages due to a willful or negligent act.)

This change in court attitude has created a new set of concerns for traffic agencies. Obviously, it was never enough simply to construct roads or install signs. They had to be maintained. But the new susceptibility to tort claims has forced safety and maintenance agencies to pay much closer attention to the condition and placement of signs.

The reason is not difficult to discern. "What did the drivers know?" and "When did they know it?" are relevant questions in every accident investigation.

Signs at Fault

Much of what drivers need to know is supplied by traffic signs. If a sign at the scene had been knocked over and not replaced; if it could not be read because its reflective surface was dirty or badly weathered; if it was placed too close to the hazard to allow the driver time to react; if one or more of these sign failures was present, who is accountable?

The condition and placement of signs at an accident site are easy questions of fact for an attorney in a tort action to establish, and the potential value to the client is not overlooked.

U.S. courts no longer protect local governments from tort suits.

Earlier this year, Gordon Baca, chairman of the Transportation Research Board Task Force on Torts, told the group that tort claims in 1988-89 cost the state of California $50 million out of pocket, not counting attorney fees, engineering time, and other costs. Baca estimated that tort costs for traffic agencies nationwide were about $1 billion in 1989. The *Engineering News Record* reported last October that claims against traffic agencies have increased 1,500 percent in the past 15 years.

One can argue — and with considerable justification — that such trends are more the fault of greed and a growing eagerness to sue than of lax professional attention to roadway safety. The argument may even have some impact eventually, but hopes for the future do not change the current facts: more and more juries are holding government agencies accountable.

Lax Procedures

Moreover, the greed-and-litigiousness argument is not entirely convincing. Research and court actions are revealing that the sign maintenance procedures of most traffic agencies are not reassuring. Last August, the Federal Highway Administration (FHWA) noted that "only a small number of states maintained statewide inventories of their traffic signs . . . very few states evaluated the performance of their highway signs or provided for a periodic replacement program."

Not surprisingly, the courts' interest in accountability has spurred efforts to determine standards by which to judge it. On this topic, the Manual of Uniform Traffic Control Devices (MUTCD) has been some help but also the source of some confusion. The MUTCD does set forth standards, but critics point to confusion in use of such terms as "shall," "should" and "may" and a failure to distinguish clearly between background and how-to information on the one hand, and standards on the other.

Roy Anderson, a professional engineer with experience as an expert witness for both plaintiffs and defendants in tort cases, thinks it's easy to overemphasize the should-shall-may problem. "Juries will decide whether it was reasonable to have a sign up," he

Worn-out signs can lose so much of their reflective characteristics that they make night driving dangerous. A sign-maintenance program would replace signs before they reach this condition and head off law suits against the local government responsible.

has stated. "Whether the Manual says 'shall, should, or may' may not carry much weight."

The MUTCD has also been criticized for inadequate treatment of newer electronic, changeable-message signs and for its failure to set standards for reflectivity levels. The Federal Procurements Act of 1985 does state that signs should be replaced when they have lost 50 percent or more of their "original" reflectivity, but the MUTCD and state manuals are silent on the subject.

Minimum Brightness

At least partially in response to such criticism, the FHWA is looking at minimum brightness requirements and has promised a thorough revision of the MUTCD in three to five years. Meanwhile, the Office of Traffic Operations has initiated a sign-upgrading program for all states. The "Road to Better Highway Signing" program calls for states to create accurate inventories, establish orderly replacement and refurbishing schedules and begin evaluations of sign performance and program effectiveness.

The value of uniform standards for sign size, brightness, placement and replacement is hardly debatable. Nonetheless, it would be a mistake for state and local traffic agencies to postpone action until national standards have been agreed upon and fully published. First, the broad outlines of what will be covered by such standards are already visible. Second, any program that includes reasonable standards and demonstrates consistent, systematic implementation is virtually certain to enhance safety and also stand up well in court.

The elements of a sound sign maintenance program are no mystery. Traffic signs are subject to a variety of assaults but a list of their "enemies" is relatively short. Signs can be knocked down, bent over, or twisted aside by passing vehicles; they are shot at and hit by highway sharpshooters; and they are soiled by splashed mud. Graffiti artists "decorate" them by night, and the sun smites them by day. With the exception of weather damage, which is subtle and evolutionary, the resulting injuries are not difficult to identify.

System Counts

The key to effective sign maintenance is system. Generally speaking, two sorts of tasks should be routinized: those that are essentially insignificant and not worthy of a real decision each time they are performed, and those that are very significant and demanding of careful execution. Putting on one's left shoe first is an example of the first; readying an airliner for takeoff is an example of the second.

For several reasons, a sign maintenance program falls into the second category. First, as with the airliner, there are simply too many details to entrust to memory. In most jurisdictions, the number of signs in use will total at least four figures, and often five. Each sign is a "detail," and that many details can only be managed systematically. Second, the consequences of overlooking one of the details can be costly, even tragic.

So what are the elements of a systematic sign maintenance program?

Inventory

All signs in a jurisdiction should be itemized by location, installation date, type, size, facing direction, substrate material and the grade and manufacturer of reflective sheeting. Obviously, computers provide the ideal technology for managing such a data base, but printed forms for manual record keeping are also available and can be used efficiently.

State maintenance not 'reassuring,' says FHWA.

Data collection in the field can be done manually, but video and photologging techniques for collecting the data are rapidly evolving. Perhaps the most advanced video logging and retrieval equipment is now being used in Norway. The Norwegian road system is being video-logged by still-frame video cameras. Location and condition data can be edited onto the record which is stored in final form on video disk.

At least one computer software package is available to store a sign inventory, and other software has been developed to record, file and manipulate the kinds of data needed for an adequate inventory. In a report for the Transportation Research Board in 1988, R. A. Cunard stated that an inventory of street and highway signs should:

1. List all signs on the right-of-way.
2. Have the flexibility to add, delete and move entries by location.
3. Reflect maintenance work completed.
4. Maintain historical records of work done on each sign.
5. Be accessible by sign location.
6. Present information in words rather than with numerical or letter codes.
7. Be user friendly.

If a jurisdiction cannot afford a computerized inventory, a low-tech alternative is available. A sign's installation date can be recorded on the sign itself by affixing a sticker. Having the information on the sign allows maintenance crews to determine on the spot that a sign is approaching the end of its effective life and make a replacement. Sticker colors and placement can be varied to permit easy recognition from a vehicle.

Maintenance

Once an inventory is in place, a regular program of inspection and replacement should be implemented, and all activity should be recorded in the inventory. When a program has been in effect and tracked by computer for several years, patterns of wear and abuse will probably emerge. Users may discover, for example, that signs at certain locations tend to suffer certain kinds of damage. Complaints of sign visibility and legibility may sometimes be heard from older drivers, particularly for signs needed for finding the way — street name signs and route markers, for example. Reviews of the site may suggest alternative sign locations, larger and brighter signs, greater height or wider offset. Upgrading specifications to higher performance materials also can improve durability and readability.

Although it is essential to have the ability to track problems with individual signs or locations, some jurisdictions have also devised mass replacement schedules. One city, for example, has divided its territory into five areas and replaces all signs in one area each year. In this way, all signs in the city are replaced every five years. The system no doubt replaces some north-facing or otherwise sheltered signs that would not require a five-year schedule, but this is a relatively small disadvantage, and the efficiencies of the "clean sweep" may well offset it.

Extra-bright reflective materials help important road signs stand out from urban visual clutter.

Evaluation

The critical performance issue is reflectivity. Signs that have been knocked down, marked up, or shot through are easy to identify. Determining when a sign has lost 50 percent of its reflectivity is quite another matter. If the maintenance person does not have a retroreflectometer, the sign must be inspected at night using the low headlight beam. Without a retroreflectometer, there is no way to make a reliable judgment in the daytime.

Fortunately, new technology is on the way. One American company has developed a device to measure the retroreflectivity of pavement markings from a moving vehicle. At present, the machine costs about $25,000. Development of a similar device for in-motion "reading" of road signs is underway. Obviously such technologies, along with national retroreflectivity standards, will do much to enhance the nighttime performance of America's road signs.

Summary

Better sign maintenance is a critically important safety goal. It is not a particularly difficult challenge, but it is made complex by the 50 to 100 million signs that stand along our roads. The goal can be achieved — the challenge met — by following three fairly simple rules:

1. Use the best, most durable materials available. They may cost more in the beginning, but they will save money over time.

The key to good sign maintenance is 'system.'

2. Implement a systematic program of inspection and replacement, as described in the National Cooperative Highway Research Program (NCHRP) report number 157, "Maintenance Management of Street and Highway Signs."

3. Follow the recommendation of the Transportation Research Board's report number 218, "Transportation in an Aging Society" on the needs of older drivers, and install bigger and brighter signs. Larger and brighter signs benefit all drivers, but most especially older drivers.

It is truly a simple strategy. And agencies that follow it will keep more of their motorists happy and their engineers out of court.

EVENTS

Undercover Underwater

JULY

Vehicular Homicide/DWI Conference — July 8-12, Evanston, Ill. — Northwestern University Traffic Institute, 405 Church St., Evanston, IL 60204. (800) 323-4011.

At-Scene Accident Investigation — July 9-20, Evanston, Ill. — Northwestern University Traffic Institute, 405 Church St., Evanston, IL 60204. (800) 323-4011.

Officer Fitness Seminar — July 10, Evanston, Ill. — Northwestern University Traffic Institute, 405 Church St., Evanston, IL 60204. (800) 323-4011.

Information Systems for Highway Safety: 16th International Forum on Traffic Records Systems — July 16-19, Bal Harbour, Fla. — National Safety Council, 444 N. Michigan Ave., Chicago, IL 60611. (312) 527-4800, ext. 8405.

Advanced Drug Enforcement — July 30, Evanstion, Ill. — Northwestern University Traffic Institute, 405 Church St., Evanston, IL 60204. (800) 323-4011.

AUGUST

Managing Small & Medium-Sized Police Departments — Aug. 6-17, Evanston, Ill. — Northwestern University Traffic Institute, 405 Church St., Evanston, IL 60204. (800) 323-4011.

Search & Recovery/Rescue Underwater Investigation — Aug. 13-17, Evanston, Ill. — Northwestern University Traffic Institue, 405 Church St., Evanston, IL 60204. (800) 323-4011.

Security Management Seminar —

Aug. 13-15, Evanston, Ill. — Northwestern University Traffic Institute, 405 Church St., Evanston, IL 60204. (800) 323-4011.

Field Training Officers Program — Aug. 20-24, Evanston, Ill. — Northwestern University Traffic Institute, 405 Church St., Evanston, IL 60204. (800) 323-4011.

Organizational Planning — Aug. 20-24, Evanston, Ill. — Northwestern University Traffic Institute, 405 Church St., Evanston, IL 60204. (800) 323-4011.

SEPTEMBER

5th Annual Emergency Vehicle and Fleet Management Conference — Sept. 20-22, Nashville, Tenn. — The Conference Corporation, P.O. Box 805, Solana Beach, CA 92075. (619) 481-5267.

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OCTOBER

4th International Winter Weather Workshop — Oct. 10-12, St. Louis, Mo. — Surface Systems, Inc., 10420 Baur Blvd., St. Louis, MO 63132-1905. (800) 325-SCAN or (314) 569-1002.

SAE 8th Annual Colloquium on Brakes & Educational Display — Oct. 14-17, Atlantic City, N.J. — Society of Automotive Engineers, Inc., Dept. 935, 400 Commonwealth Dr., Warrendale, PA 15096-0001. (412) 772-7131.

NOVEMBER

SAE Stapp Car Crash Conference — Nov. 4-7, Orlando, Fla. — Society of Automotive Engineers, Inc., Dept. 935, 400 Commonwealth Drive, Warrendale, PA 15096. (412) 772-7131.

JANUARY 1991

Symposium on Work Zone Traffic Control — Jan. 18-19, Orlando, Fla. — Federal Highway Administration, (703) 285-2517; or Bellomo-McGee, Inc., 8330 Boone Blvd., Vienna, VA 22182. (703) 847-3071.

NEW PRODUCTS

'Hola! Achtung! Send Help'

Distress Sign

A fluorescent "SEND HELP" sign that can be attached to the roof or hood of a vehicle eliminates many of the dangers that often befall stranded motorists. Particularly at night, distressed drivers are vulnerable to criminal acts.

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The 14-by-9-inch white sign printed in fluorescent red paint has a patented magnetic base that firmly adheres to car bodies to prevent it from being blown off. The message is also available in French, German, Spanish and Italian. — **D & D, Ltd.,** Dept. Com, 1306 Hepburn Ave., Louisville, KY 40204.

Brake Repair Kits

Replacement parts, repair kits and gasket sets for Jacobs engine brakes used on the Cummins 855 C.I. series diesel engine are now available. The parts are fully interchangeable.

The packaged kits contain the parts necessary to perform engine tune-ups, minor brake repairs or a complete brake overhaul. The brake kits contain both types of crossover gaskets and the premium valve cover gasket. — **Korody-Colyer,** 700 W. Artesia Blvd., P.O. Box 9059, Compton, CA 90224-9059.

Highway Markers

The newly designed base of the Stimsonite Model 66 construction zone pavement reflective marker makes it adhere to the pavement, greatly reducing losses of the safety devices.

The new design allows adhesive to flow into cavities in the patterned base, creating a strong bond between the marker and the base. The markers are applied to the pavement with a specially formulated bituminous adhesive that absorbs shock and acts as a thermal buffer between the marker and pavement during temperature changes. The adhesive can be applied in temperatures as low as 35 degrees Fahrenheit.

The raised surface of the reflective markers alerts the driver who is drifting into another lane.

The 4-inch-by-4-inch polymer markers are available in yellow or white, with one-way or two-way reflectors that are highly visible day or night and in the rain. — **Stimsonite Products,** Amerace Corp., 7542 N. Natchez Ave., Niles, IL 60648.

Flat-Proofing Tires

Three new Mistaflex tire-filling products (S9040, S9050 and S9060) have been introduced. The soft, rubber-like urethane replaces the air in pneumatic tires on off-the-road commercial and industrial vehicles. This solid core resists cuts and punctures that normally cause flats that can lead to accidents.

The Mistaflex-filled tires are recommended for such harsh-surfaced areas as steel mills, strip mines, scrapyards, construction sites and lumberyards. The product is not intended for tires on cars or other on-road vehicles.

Because Mistaflex does not contain the toxic product toluene diisocyanate (TDI), it is exempt from EPA and OSHA laws and regulations that apply to products that use TDI. — **MarChem Corp.,** 2500 Adie Rd., Maryland Heights, MO 63043.

Towing Mirror

This product easily attaches to a vehicle's side-view mirrors to expand a driver's field of vision when pulling objects such as trailers. The extended-view mirror can be adjusted to allow the driver to see approaching traffic and to safely make maneuvers that are often tricky when towing. The 5-inch-by-6-inch mirror is corrosion resistant. —**Minesse Enterprises,** P.O Box 66317, Chicago, IL 60666-0317.

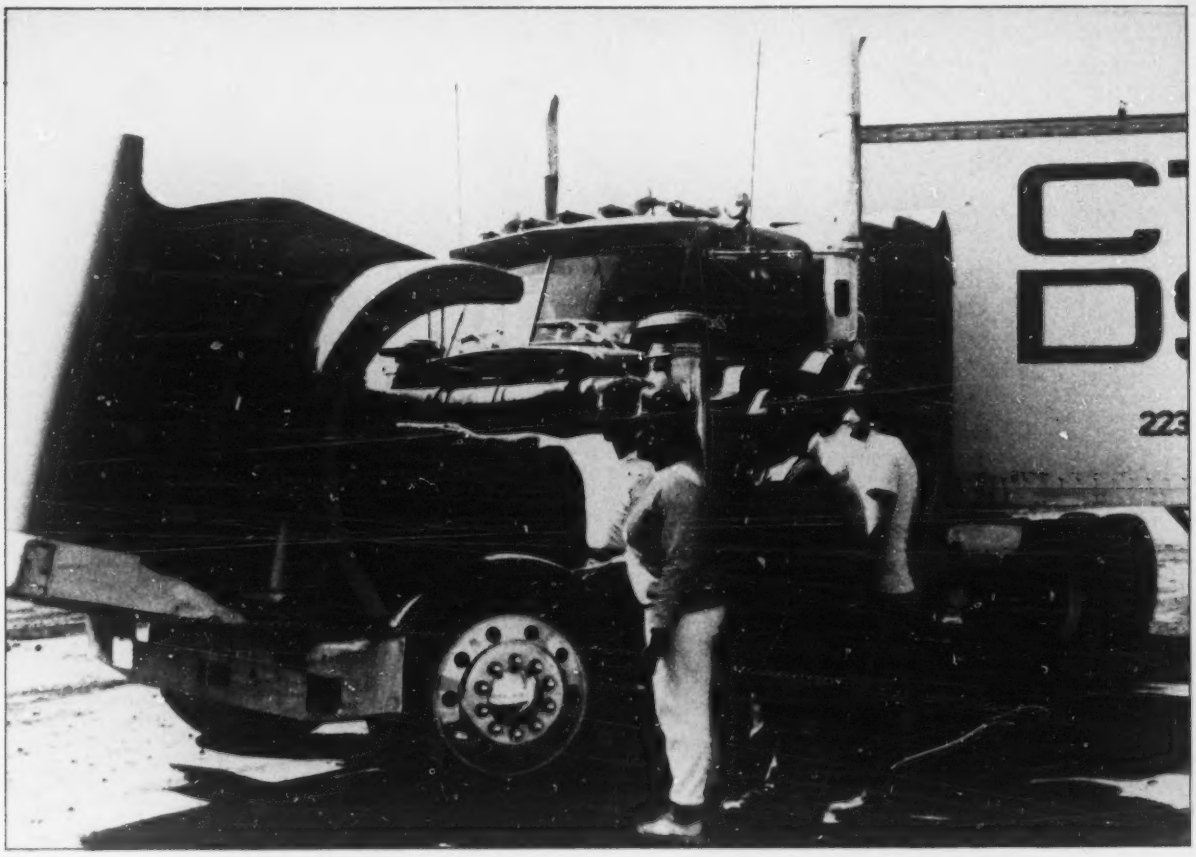
Movement Sensor

The Vehicle Reverse Sensor Switch (SRD-100) activates warning devices such as back-up alarms or warning lights whenever the truck to which it is connected moves backward at least 15 inches. The electronic sensor can detect the reverse movement whether the ignition is on or off, or whether the vehicle is in or out of gear. The warning devices alert the operator and those in the area that the vehicle is moving. — **Preco, Inc.,** 415 N. Maple Grove, Boise, ID 83704-8241.

Grabber Jaws

Newly designed "grabber jaws" are now available for the Hurst Jaws of Life rescue system. They make it easier for users to maintain the necessary positioning of spreaders during emergency extrication procedures.

The unique tips of the jaws actually bite into the material during the spreading process, providing a more stable grasp. — **Hale Fire Pump Co.,** 700 Spring Mill Ave., Conshohocken, PA 19428.



Student truck drivers get organized hands-on training at one of the schools now graduating 40,000 to 45,000 new truck drivers a year. Industry experts say that's better than "driving around the block until they get the hang of it." (Photos: Chicago Truck Driving School.)

BIG WHEELS

A growing demand for truck drivers raises new safety questions

BY THOMAS FRISBIE

THIS SPRING, Edward Kynaston saw a sign on Elk Grove Boulevard in Elk Grove, Calif., that he thinks has a lot to do with how safe highways will be in coming years.

Kynaston is president of the Professional Truck Drivers Training Institute of America. The sign, which was near his headquarters, advertised health-care insurance, management training and $6 to $8 an hour to start—for working in a fast food restaurant.

To Kynaston, the sign also illustrated just how hard it is to keep experienced, top-quality truck drivers on the road these days.

"With $6 to $8 an hour (and some overtime), you can make $20,000 a year on your first job. You don't necessarily make much more (to start) as a truck driver, and you are away from home a lot, and you drive 10 hours a day, and you have to unload the truck at the end of that day," says Kynaston, whose organization represents 20 companies that operate 35 truck-driving schools in 22 states. "There are not that many people around anymore who want to be truck drivers."

That might seem like a minor problem best left to the personnel offices at trucking companies. But industry experts warn it is also a traffic safety

problem. That's because experienced, qualified truck drivers at the wheel are one of the most important factors in highway safety. Between 5,000 and 6,000 people a year now are killed in accidents involving heavy trucks, and some 160,000 people a year are injured in commercial-truck crashes. From 1982 to 1987, accidents involving large trucks increased by 12 percent. (The 1987 total was lower than the peak year of 1979.)

Good Attitude Needed

"You don't have to be a surgeon to be a good truck driver, but you have to be a particular kind of person who has the right kind of attitude to drive an 80,000-pound rig safely," says J. Terry Turner, executive director of the Interstate Truckload Carriers Conference. "It takes a certain approach, attitude and patience to drive a truck safely."

Perhaps the first signs in the past decade that truck driving as a career was going to follow a new route were the changes in federal laws in the early 1980s, commonly referred to as trucking deregulation. For truckers, deregulation and the widespread replacement of union jobs with lower-paying nonunion posts have made it harder to keep their salaries in step with the cost of living. That and tighter scheduling, longer hours and stricter enforcement of traffic laws are pushing many long-time truck drivers out of the field.

The National Moving & Storage Technical Foundation has estimated that turnover among truck drivers can be as high as 200 percent a year for some companies. A 1988 ranking of job quality by American References Inc., Chicago, listed truck driving as 236th out of 250 employment categories, lower than such jobs as file clerk and stevedore.

"The problem is that because of the huge competitive pressures to obtain freight orders in today's economy, the only real way to obtain them is to either provide service that is unmatched or to cut the rate, and that is what has been going on for four, five, six years, and it has had an adverse impact on drivers," explains Turner. His organization includes some 600 companies that use 102,000 tractors and 200,000 trailers to move freight through every state but Hawaii and all of Canada. "Their pay hasn't kept up with the national average, and they need to be paid more money for what they do. People don't appreciate what a truck driver does.

"It's much easier than it's ever been (to drive a truck) because of advancements in the equipment, but it takes concentration; you have to be constantly aware of where you are and who is around and what potential problems lie ahead. Other people in standard autos don't understand the operating characteristics of trucks, and they think because a car can stop on a dime so can a truck, and it just isn't so.

"People have wrong ideas of how to operate their vehicles in and around trucks. When you operate an 80,000-pound rig, you have to concentrate twice as hard about giving people room to move their vehicles because you need more room to move yours. You have to be aware, when you want to do something simple like change lanes, to look ahead, leave plenty of room, and make sure blind spots aren't hiding a car. When you have got a rig 65 feet long, there is a big blind spot in that thing and you have to be careful. If the drivers of other vehicles on the road had a little respect, we would probably be further ahead in all these traffic safety problems, and we would all be a little safer."

Update

One way to cope with the projected driver shortage would be to hook on another trailer behind existing two-trailer rigs.

Then the same number of drivers could cope with 50 percent more freight.

According to the *Wall Street Journal*, the trucking industry is already lobbying in Washington for regulatory approval of a "freight train" that runs on highways instead of tracks.

The proposed rigs would consist of a tractor and three trailers totaling 100 feet in length.

Some opposition has already surfaced from critics raising questions about safety and potential damage to highways.

The average age of truckers is now 40 and increasing.

No Respect

The problem is that the drivers of the other vehicles often don't have that respect. And for many truck drivers and would-be drivers, the factors squeezing their pay and making their jobs more difficult mean the job just isn't worth it anymore, even though the U.S. Department of Labor has estimated that trucking is among the occupations that will have the greatest demand for workers in coming years. According to one estimate, some 400,000 to 500,000 truck driving jobs will go unfilled in the 1990s, and it is estimated that 20 percent more truck drivers will be needed by the end of the century.

"What you are going to find is virtually every full-truckload carrier has problems finding truck drivers," notes Kynaston. "They have a retention problem keeping them in the industry, and retention of drivers is important. Some of them literally have trucks parked because they can't find drivers."

That's why, around the country, truck driving schools are gearing up joint efforts with trucking companies to recruit new drivers. Population groups historically overlooked, such as women and newly arrived immigrants, are the most likely sources of new drivers, school officials maintain.

But even if new drivers can be found, they won't be as experienced as some of those who are leaving. And those who are staying are tending, on average, to be older.

"It does cause a problem where you have high turnover rates and large numbers of people coming into the industry who are less experienced," Kynaston comments.

While industry people talk about the need to bring more young drivers into the field, Kenneth L. Campbell, director of the Center for National Truck Statistics at the University of Michigan's Transportation Research Center, says young drivers are more likely to be involved in accidents.

"We've done some work that looks at the age of the driver and (the rate of) fatal accident involvement as a function per mile traveled," explains Campbell. "We've done that with a national population for all vehicles with ratings of over 10,000 pounds.

"The primary finding was the rather dramatic over-involvement of the

younger drivers, something like five times the risk of fatal accident involvement," notes Campbell.

But a potential flood of new, younger, inexperienced drivers being recruited to fill vacant jobs isn't the only concern, Campbell says. Right now, because young people have tended not to drive trucks, the average age of truck drivers is rising.

"In general, the truck driver population's age is increasing," explains Campbell. The average age is around 40, although it depends on which segments of the trucking industry you are looking at. There is a general concern in traffic safety with older drivers, with realizing the whole population is aging and the older group is growing. All of the baby boomers are moving through the population. So far, we don't have older people driving trucks, but maybe we will 10 years from now. It's viewed as a potential problem among passenger car drivers, but not one yet for truck drivers.

Nationwide CDL will weed out the worst drivers.

"Truck driving is a pretty hard profession, and historically people have tended to retire by the time they were 50 or so. Whether the driver shortage will have the effect of keeping people in the industry longer than they have been accustomed to, we don't know."

Anyone looking for indications of how truck driving is changing would find another significant sign at the loading docks of an increasing number of factories where "just-in-time" shipping practices are in place. Under just-in-time, shippers and receivers try to move their supplies and products in and out immediately instead of stockpiling them in storage areas.

The goal of just-in-time is to reduce inventory from, say, two-to-four weeks to two-days-to-immediate, which eliminates inventories both on the receiving end and the shipping end.

"Just-in-time is in the mainstream of manufacturing for mid-sized to large companies," explains the president of a company that designs loading docks. "Generally, the [truck's] trailer is your stock room, and not your floor space that you are spending $8 a square foot for."

Another executive, whose company builds loading-dock products, says "On an over-all basis, just-in-time has streamlined manufacturing, cut costs and made a lot of companies much more efficient."

Waiting Increases Stress

But just-in-time hasn't necessarily made the truck driver's job more efficient. In fact, many truck drivers find themselves delayed for hours waiting for a chance to load or unload at a company where just-in-time has crowded the loading-dock.

"The truck driver is generally paid on a per-mile basis, and he basically makes his money when he is out there running, and if his truck isn't moving he isn't making money," Turner adds. "Our problem is that shippers and receivers—customers (using just-in-time)—are hanging up equipment for hours on end, which does not generate pay for the driver.

"Trucks have become warehouses on wheels. (Just-in-time) backs up the trucks at the unloading door or loading door because of very tight schedules, and the trucker is the one who has to pay the price by waiting six hours to get in and out. It is not conducive to keeping good quality people." They may sit four to six hours without compensation.

"When you put it all together, you have working conditions that are not very appealing to most people," says Turner.

Not everything about the future of truck driving is worrisome. Many people inside and outside of the industry are encouraged by the creation of a nationwide commercial driver's license (CDL) for all drivers of large trucks. The CDL program is scheduled to be implemented in all states by April 1, 1992.

To obtain a CDL, truck drivers will be required to pass a written test and, if they are to drive a truck weighing more than 26,000 pounds, to take the driving test in the type of truck they intend to operate. The CDLs also will be part of the new Commercial Driver's License Information System, which will keep a nationwide record of infractions. The idea is to put an end to the practice by some truck drivers of obtaining driver's licenses in numerous states and then "spreading around" traffic tickets to avoid having their licenses revoked.

One Million CDLs Issued

Stanley Hamilton, a spokesman for the Federal Highway Administration's Office of Motor Carrier Safety, says that more than one million CDLs have already been issued. Some 5.5 million truck drivers eventually will be included in the program, Hamilton explains. As of this spring, Arizona, California, Georgia, Illinois, Maryland, Michigan, Minnesota, New Hampshire, Oregon, Utah, Virginia and Washington had put the CDL program into force. By the end of 1990, the CDL program is scheduled to be implemented in 35 states, and 16 more plan to join up by the end of 1991.

The CDL program is expected to get some dangerous truck drivers off the road and to keep others from getting into the cab. But, by themselves, CDLs won't ensure that drivers are safe.

For one thing, the CDL law does not require any training for truck drivers, says Barry Sweedler, director of the Bureau of Safety Programs at the National Transportation Safety Board. "Just because they pass the test doesn't mean they know everything they have to know to drive a truck. They can't ask you about every conceivable situation on a test."

Highway safety also may depend on a court ruling on regulations for drug- and alcohol-testing, Sweedler says. A California appeals court has issued a preliminary injunction against the U.S. Department of Transportation's mandatory post-accident and random drug testing policy for truck drivers. Provisions calling for pre-employment and for-cause drug testing were upheld.

Tomorrow's truck drivers will be less experienced.

Many Drivers on Drugs

"We found (in a study) a third of drivers who died in accidents in eight states were positive for drugs or alcohol," notes Sweedler. "About 10 percent of drivers had serious health problems—mostly cardiac problems—that should have disqualified them from driving."

"Because of drug and alcohol test-

A vehicle 65 feet long and weighing 80,000 pounds demands "a certain attitude and patience" as well as skill to drive safely.

ing and the hope for tightening up medical requirements, I think you are going to see a need for many new drivers, and the industry tells us it is not going to be so easy to find these drivers from the traditional areas. I think that, based on what I hear from industry sources, it sounds like they are going to turn to non-traditional sources, such as immigrants newly arrived to this country and more women."

To help train those new drivers, there are numerous truck-driving schools around the country. But if past patterns hold, many of the new drivers won't get any training, Campbell maintains.

"Most of the drivers on the road today had, if they had any training at all, training done by a company that they worked for. I don't have any firm figures, but a recent study in Michigan would suggest that fewer than 15 percent had any training at all. Schools were only a small fraction of that 15 percent. To count as training (for the purposes of the study), it had to be some kind of training involving classroom and on-the-road instruction. What might have been the more common situation is where someone just fetched out the vehicle and went around the block a few times until he had the hang of it."

One reason that more would-be drivers have not attended schools in the past is that such training didn't guarantee jobs, Campbell believes.

"The first problem was that there was no way to assess the merit of the programs that were offered. Suppose you decide to become a truck driver. There is no way to know how good the curriculum is at a particular school. Anything would have been available, including a mail order course you could complete in your own living room."

'Not that many people want to drive trucks.'

As a result, diplomas from such schools tended not to impress people in charge of hiring new truck drivers, explains Campbell.

Certification Trend

However, there appears to be a trend toward certifying truck-driving schools and formal training of new drivers.

"New drivers are much more likely to have training," says Campbell. "I think companies tend to look for that more now in hiring."

But making training available for new truck drivers isn't all that simple, says James McAlpin, executive director of the Commission of Accredited Truck Driving Schools, which represents 19 schools.

"Part of the problem has to do with the financial aid," McAlpin explains. "The student loan situation is in upheaval right now. 'Upheaval' is one of the nicer things you could say."

A new law that went into effect Jan. 1, aimed at lowering high default rates on student loans, has cut enrollments at truck driving schools by as much as 40 percent, says McAlpin.

"The problem for the driving schools is there seems to be an intent in Congress to have federal student loans only for individuals who have high school diplomas or general equivalency degrees. That eliminates an individual who for various reasons never completed high school."

Now, driving schools are graduating 40,000 to 45,000 truck drivers a year, but it's not enough, McAlpin concludes. Officials of schools and trucking companies are considering new marketing plans to bring more people into the field. STOP

An example of the menace of an everyday substance, the gasoline in this van apparently leaked from the gas tank to be ignited by the hot exhaust system below.

Alternate Fuels Spark New Concerns

As alternate fuels take off, hazards take new twists

BY MICHAEL P. MALONE

COMBINING politics, science, consumer demands and oil industry research can produce a highly combustible mixture. The explosion of debate concerning alternative fuels, sparked by the introduction of the Clean Air Act, has focused on environmental and health issues that raise questions about the continued use of gasoline to fuel America's automobiles.

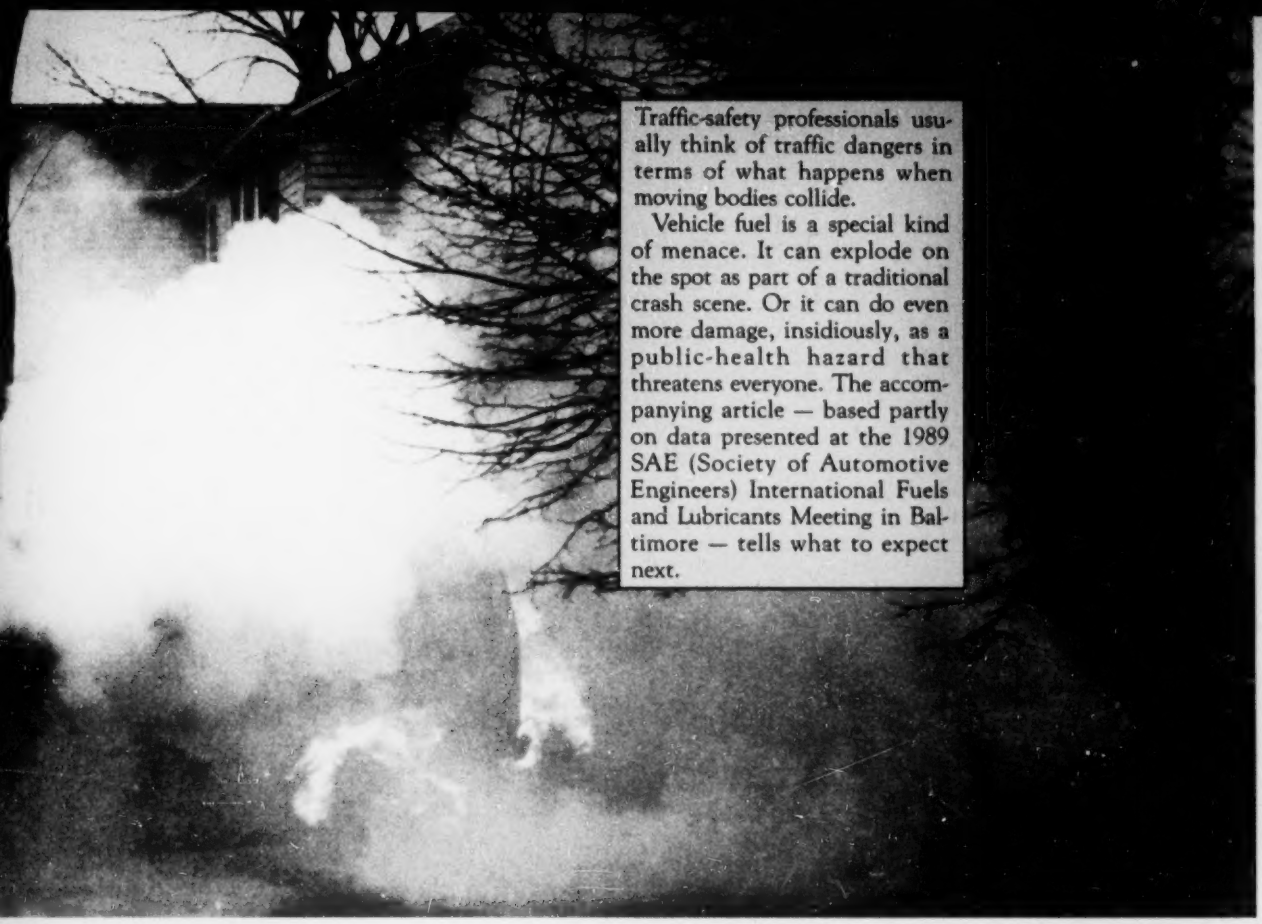
The current standards for auto emissions were enacted by Congress in 1977, but each year since then Americans have bought more cars and driven them more miles. One critical factor in emissions control — vehicle miles driven — shows no sign of decreasing. It is largely on account of this growth that Congress has looked at another way to attack the problem — creating cleaner-burning fuels. In the words of President Bush, the search for alternative fuels is part of a campaign to "reconcile the automobile to the environment."

The political momentum is a reflection of the growing environmental concern of the American people. The first Earth Day in 1970 was designed to promote a campaign of public awareness of environmental issues. On Earth Day, 1990, a new Gallup poll showed that 76 percent of American adults consider themselves "environmentalists." Ecological issues are no longer a concern of a small cadre of activists, says the poll. "Today, environmentalists comprise a broad-based coalition from diverse social and economic backgrounds," notes a recent article in the *Gallup Report*.

The Party's Over

If the message is being transmitted from the "bottom up," it has not only reached the Oval Office and corridors of Congress, it has penetrated the board rooms of the automotive industry. "The party's over," says Robert A. Lutz, president of Chrysler Motors Corporation. "We are making a mess of our environment and the sooner we clean it up the better."

Since there is basic agreement on almost all sides that cleaner air is an



Traffic-safety professionals usually think of traffic dangers in terms of what happens when moving bodies collide.

Vehicle fuel is a special kind of menace. It can explode on the spot as part of a traditional crash scene. Or it can do even more damage, insidiously, as a public-health hazard that threatens everyone. The accompanying article — based partly on data presented at the 1989 SAE (Society of Automotive Engineers) International Fuels and Lubricants Meeting in Baltimore — tells what to expect next.

important national goal and that the gasoline-powered car is the single largest source of pollutants, one might expect a clear course of action to solve the problem to emerge. Unfortunately, although an agreement may be reached on the scope and source of the problem, it disappears as soon as remedies are discussed.

The proposed revisions of the *Clean Air Act* of 1970, as originally introduced in June 1989, specifically called for the introduction of vehicles powered by "alternative fuels" into America's most polluted cities by 1997. Under the large umbrella of "alternative fuels" one finds such relatively common combinations as gasoline and methanol, as well as some futuristic fuels like solar-hydrogen, which depend on a yet-to-be-developed technology. The search for alternative fuels involves an analysis of their costs, their safety and health risks, and the likelihood of consumer acceptance.

Focus on Methanol

Perhaps the most widely discussed alternative fuel is methanol, an alcohol fuel made from coal, wood, natural gas or garbage. With regard to infrastructure and automotive design and production costs, a mixture of 85 percent methane and 15 percent gasoline could be the least expensive of the alternate fuels.

Refueling with CNG is more dangerous than pumping gas.

A study presented by Margaret K. Singh at the 1989 SAE International Fuels and Lubricants meeting compared the infrastructure requirements of various alternative fuels. She found methanol to be the least expensive. Methanol would have the least impact on the current delivery system, with most of the additional costs due to the necessity of having larger storage facilities. A car would require almost twice as much methanol as gasoline to go the same distance. She estimated that currently produced automobiles could become "flexible fuel vehicles" (FFVs) and run on a methane-gas mixture (M85) at an increased cost of only $210 to $340 per mass-produced FFV.

Safety Concerns

Some serious safety concerns over the use of methanol have been raised. In its pure form, it burns without a visible flame, creating a hazard for drivers and emergency personnel. Mixing methanol with gasoline eliminates this risk, but also reduces its environmental benefits — hydrocarbon emissions, for example, are 90 percent less than gasoline when straight methanol is used, but only 35 percent less with M85, notes *Consumer Reports*.

Methanol is also highly toxic. Ingesting it can cause blindness, brain damage and death. Car makers would have to install devices in tanks to prevent the siphoning of fuel. As an alcohol, methanol is water-soluble, creating a danger to the water supply from spills and storage tank leaks.

Because nearly twice as much methanol fuel would be required to travel a given distance as with a car powered by gasoline, consumers would have to refuel twice as often, or car makers would have to double the size of their fuel tanks, compromising any design and size adjustments that could be made to increase mileage. In addition, methanol is highly corrosive. The tanks would have to be

stainless steel. The tubing and engine parts that come in contact with the fuel would have to be treated to withstand corrosion.

Finally, while methanol would reduce hydrocarbon emissions and total airborne toxins, burning methanol produces four to eight times more formaldehyde than gasoline, says *Consumer Reports*. The same smelly stuff used to store frogs for biology experiments also adds to the creation of ozone in the lower atmosphere, irritates eyes and lungs, and is suspected of being carcinogenic.

The environmental tradeoffs don't stop there — if methanol is produced from natural gas, it would help decrease carbon dioxide levels 10 percent, but if it is produced from coal it would increase these levels 100 percent.

Compressed Natural Gas

Compressed natural gas (CNG) is an attractive alternative because of abundant U.S. and world supplies. It could reduce hydrocarbon and carbon monoxide emissions by at least half, while reducing carbon dioxide emissions by 10 percent. Carbon monoxide and airborne toxins are almost totally eliminated.

The CNG vehicle sounds like a winner in the "fuel-of-the-future" derby until someone wants to drive more than 100 miles without refueling. A passenger car would have to be loaded like a pack-mule with extra tanks to get anywhere near the miles-per-fill-up today's driver expects.

According to technical papers presented at the SAE fuels and lubricants meeting, the costs for adding on CNG tanks and filling stations to existing gas stations would also be high, due to the required size of the storage tanks, the delivery by pipeline to stations and a special compressor needed to speed up refueling. For these reasons, CNG is being considered primarily for fleet use, where its cost compared to gasoline will be able to offset the infrastructure expenses.

Government subsidies or tax credits for CNG fleets might also speed its acceptance. There are currently 30,000 CNG fleet vehicles operating in the U.S., including buses specifically designed for natural gas fuel which are being tested this year in Ohio and California.

CNG in Canada

Canada is currently experimenting with privately owned and driven vehicles that can use CNG as an alternative fuel. According to an SAE technical paper prepared by David L. Greene, the Canadian test shows that consumers' acceptance of natural gas depends on fuel cost, performance, range limitations, refueling convenience and maintenance costs. His conclusions regarding refueling would pertain to any alternative fuel. "An adequate refueling network appears to be a precondition for market acceptance of alternative fuel vehicles and essential if flexible fuel vehicles are to use the new fuel a significant fraction of the time," states Greene.

Safety issues might arise with CNG vehicles from two factors: doubling the size of the tanks could expose them to more stress in a crash and delivering the CNG under pressure during fueling may be more dangerous than the current pumping of gasoline.

The electric-powered car has been a novelty at auto shows for more than a decade. The breakthrough in technology that would put an electric car in every garage has always seemed to be just around the corner. Unfortunately, it is still around the corner. The most optimistic estimates put the mass produced electric car 10 to 15 years away from full production, and this assumes major technological advances. The basic problem is inherent in the source of power — a very large battery. The battery could weigh 1,000 pounds, require eight to 10 hours to charge, and then have a potential range of only 100 miles.

The least expensive alternative fuel burns without a visible flame.

If that weren't enough to frighten most car buyers, the SAE report on alternative fuels estimates that a mass-produced electric car might cost as much as $6,200 more than a gasoline-powered automobile. While the cost over the life of the cars might even out (it is expected that electric cars will last longer and require less maintenance) the sticker shock alone may doom this alternative to the realm of science fiction.

Expensive, But Safe

Yet, the electric car may be the safest of all alternatives. The car itself would emit no exhaust at all and would also reduce noise pollution because of its quiet power plant. The attention of environmentalists could then be focused on the power plants producing the electricity, and emissions could be controlled at the source. Absence of flammable fuel would reduce injuries and deaths in traffic accidents. It is likely that even the most advanced electric automobiles could not reach the dangerously high speeds gas-powered cars are capable of.

The most speculative of the alternative fuels might also be the long-range solution to concerns about health, the environment and a renewable source of energy. In theory, solar-hydrogen power works this way: huge banks of solar cells in the deserts of the Southwest collect energy from the sun during the day, creating electricity; the electricity is used to separate the hydrogen atom from plain water; the hydrogen is delivered to population centers via pipeline and used to fuel cars. When hydrogen burns, the main emission is harmless water vapor.

The most significant obstacle between solar-hydrogen theory and reality is money. It takes more energy to break up water molecules and capture the hydrogen than the burning of hydrogen produces, so the production of hydrogen has not been an attractive commercial venture. But solar energy has become much cheaper during the last decade and further reductions in cost could make hydrogen fuel a competitive alternative.

Converting solar energy to hydrogen fuel also means the entire country could take advantage of sunlight as an energy source. "If you don't go to hydrogen," says Princeton University physicist Robert H. Williams, coauthor of a study on the use of hydrogen fuel, "then you're restricting photovoltaic energy to sunny areas."

James Gustave Speth, president of the World Resources Institute, is also a backer of hydrogen as an alternative fuel, stating, "None of the other alternative fuels we are considering in the Clean Air Act even comes close to hydrogen."

But the same drawbacks that make natural gas unattractive to the consumer may doom hydrogen, which has only one-sixth the energy of gasoline. Cars would require huge tanks,

A relieved firefighter confirms that all the occupants of the burned-out van scrambled out in time to escape injury.

and even then might not have a range exceeding 100 miles.

It may be that the most likely "alternative" fuel will be gasoline itself, albeit with a new, cleaner formula. Through additional refining, the heavier and lighter compounds produced as part of the current gasoline blend would be removed. These compounds are responsible for much of the current automobile emissions pollution.

Shortly after the introduction of the original *Clean Air Act* proposal calling for alternative fuel cars, Sun Oil Company and Atlantic Richfield Company (ARCO) announced plans to introduce reformulated, cleaner gasoline. The Big Three auto makers soon joined with the oil industry to announce that they would be prepared to manufacture cars capable of burning reformulated gasoline or a methanol mixture by the mid-1990s.

Both the oil companies and auto makers argued for the removal of the requirement mandating the production of alternative fuel. It was soon deleted from the proposed legislation.

Gasohol Subsidized

"Reformulations" may include methanol or ethanol mixes in addition to "better scrubbed" gasoline. The American consumer enjoyed a brief flirtation with ethanol in the 1970s as a result of the oil crisis, but the mixture never caught on because of the increased costs it adds to a gallon of fuel. Today, ethanol is produced only because of government price supports in the form of reduced motor vehicle fuel taxes on gasohol, the ethanol-gasoline blend. According to the National Corn Growers Association, 360 million bushels of corn — about five percent of the nation's crop — was used to make ethanol in 1989. Corn used for ethanol production could top one billion bushels by the turn of the century, according to the growers.

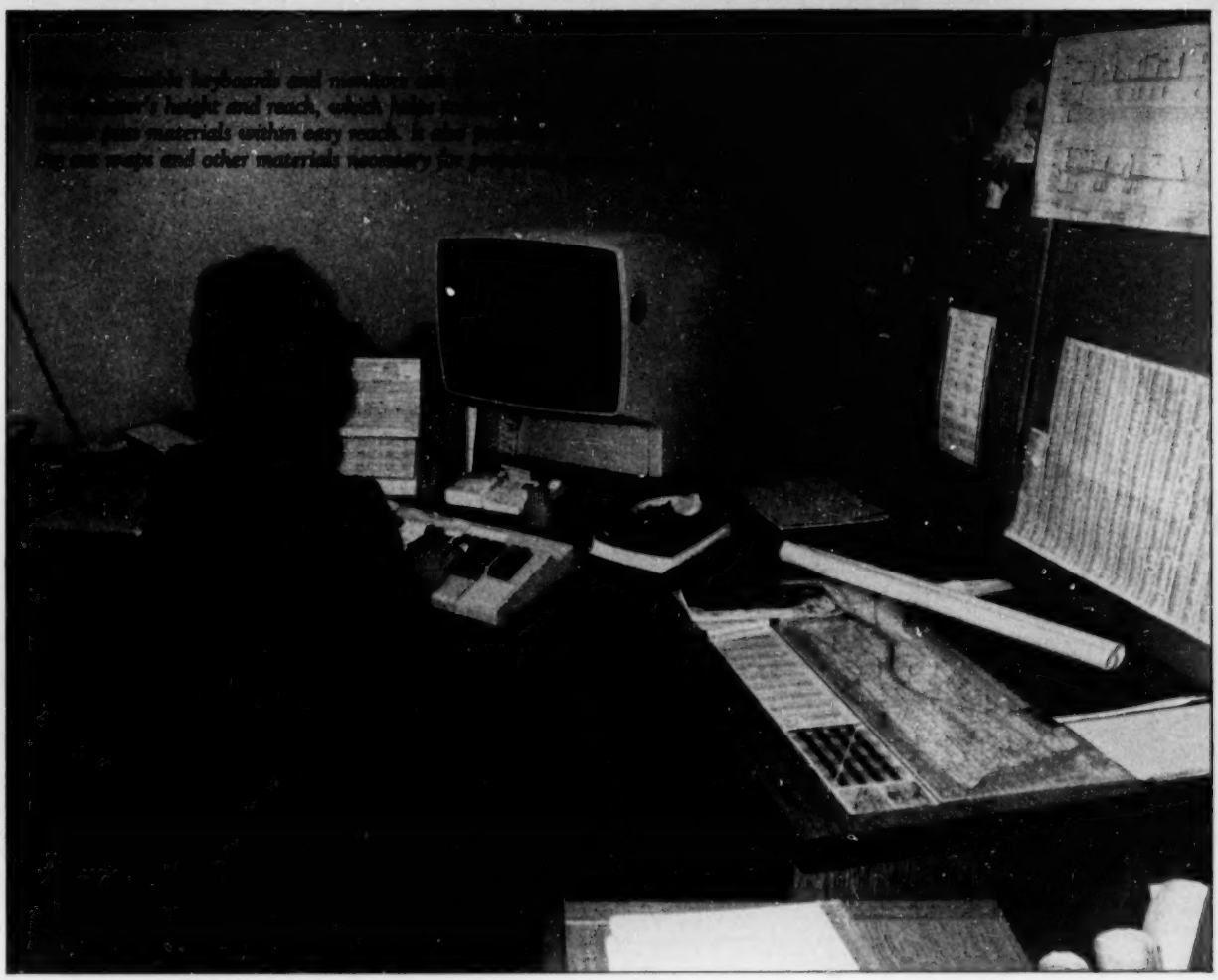
The public needs encouragement to accept less convenient fuels.

In the end, government fiat may be less important to the success of various alternative fuels than consumer demand. "I think consumers are willing to make certain tradeoffs, but it depends on the individual consumer," says Jacqueline A. Ottman, an environmental consultant, in a recent article in *American Demographics*. "The issue is that consumers genuinely want to be environmentalists, but people have thresholds of price and convenience that they will not be able to overcome. What they need are products that help them be environmentally responsible, but help them maintain the lifestyles they are already leading."

It is in the area of consumer acceptance that the reformulated gasolines score the most points versus the other alternatives. Consumers may be willing to pay more for "clean" gas, but they will likely want to fill up at the corner station and get just about as far on a tank of gas as before.

The *Clean Air Act* will focus attention on emissions, and will likely leave it up to auto makers and the oil industry to devise a way to meet those standards by the dates set in the bill. Their response will have an impact on the design of new automobiles and the fuels that power them.

These changes in manufacture and design will undoubtedly pose new challenges for traffic safety professionals. Some vehicles will explode and burn in new ways. Also, as part of the larger health and safety scene, there'll be an obligation for traffic safety educators to encourage public acceptance of less polluting fuels.



Accident Records a Lot To Husk

More efficient office helps Nebraska save lives

NEW FURNITURE in the Nebraska Department of Roads Highway Safety Division office is making record-keeping workers more accurate and productive. Without leaving their desks, they join patrolling troopers in helping move traffic safely.

Logging data for all accidents that occur on 100,000 miles of roads, streets and highways across the Cornhusker State keeps eight people busy 52 weeks a year.

Eight hours a day, data entry operators sit at their computer terminals entering 120 pieces of required information for each reported accident. Annually, some 138,000 accidents are logged.

"It is a tough job that never goes away," explained Kenneth L. Sieckmeyer, highway safety division manager, Nebraska Department of Roads.

"The work is tedious and requires a lot of attention to detail," he added. "When you're punching a keyboard

and staring at a monitor all day, fatigue is a major concern."

Reducing Stress

To help reduce stress and make operators more comfortable, the division explored ways to improve the overall work environment. The goal was to keep operators alert and their data entry accurate.

"We evaluated various types of office furniture that would help reduce glare, noise and back problems," said Sieckmeyer. This led him to Hamilton Sorter Company, Inc., Fairfield, Ohio, manufacturer of Biotec® workstations.

These workstations incorporate a number of features which make computer terminal operation more comfortable. This includes fully adjustable keyboards and monitors that can be raised, lowered or tilted to fit individual requirements.

An integral part of the installation, fabric-covered acoustical panels 56 inches high, are placed between workstations. They provide privacy, eliminate distractions and reduce noise levels.

States that skimp up front pay for it in the end.

Boosting Morale

"In addition to reducing noise, the panels improved the appearance of the office and boosted morale," Sieckmeyer noted. "Each operator now has his/her own work area and a greater feeling of professionalism, which is vitally important in this department. Lives are dependent on the accuracy of our work.

"Prior to installation of the new workstations, pairs of operators shared a standard 30 x 60-inch work table and each used a CRT on an old-fashioned terminal table purchased in the 1960s. There were no barriers to noise and distraction as we have now," the manager said.

Information contained in the accident reports has a direct bearing on the design of highways, location of signage, traffic control and the elimination of hazards.

Sieckmeyer noted that many state agencies tend to economize up front, not realizing that in the end such actions may end up costing them through reduced efficiency.

Spend to Save

"You have to spend money to save money. Too many managers do not take time to analyze the work environment—the wall colors, paintings, the individual work areas and the ability of workers to display personal items, such as family photos. All these factors impact on production, job satisfaction and overall morale," he pointed out.

Sieckmeyer reported a significant improvement in the accuracy of data entry as a result of the new furniture and other office improvements. "We used to have four people checking data that had been entered. Now we need only two and they have time to carry out other duties."

The Highway Safety Division works closely with the enforcement and education departments in Nebraska to improve highway safety.

"We develop the data that indicates where hazards to motorists exist. This information, in turn, may be used by other disciplines. Enforcement may choose to deploy more patrol officers to enforce speed limits. Education may launch a program to alert and inform drivers. Signage may be installed, or ultimately a stretch of roadway may be rebuilt," Sieckmeyer said.

Result: Fewer Deaths

Thus, the division's accident reporting program has had an effect on reducing the number of highway accidents and fatalities occurring throughout the state. "This is the bottom line," said Sieckmeyer. "We are very pleased and proud of the role this division has played.

Lives depend on the accuracy of records work.

"We feel it is proof that a work environment that is professional, personal, attractive and productive can make this kind of contribution to highway safety," said Sieckmeyer, who promised his superiors a number of productivity improvements to obtain approval for the new furniture and other office improvements.

"Our offer to the director was greater efficiency, accuracy, worker satisfaction, reduced sick leave, absences and employee turnover, plus that one position could be eliminated through attrition. We have achieved those goals," he concluded.

Acoustical panels separating all work stations help reduce distractions and improve productivity. Workers feel more professional.

Federal Agencies Unveil Highway Agenda for the 1990s

Officials take a tough stance on safety

BY JIM CASTELLI

In the wake of the National Transportation Policy announced earlier this year by President Bush and Transportation Secretary Samuel Skinner, the National Highway Traffic Safety Administration and the Federal Highway Administration have each issued a detailed agenda on traffic safety.

According to NHTSA administrator Jerry Curry, the policy makes safety its top priority, with the aim of cutting the death rate and traffic death toll over the next decade.

"The American people are demanding higher levels of safety in the cars and trucks they drive," explains Curry. "We have developed a balanced program of proposed regulatory and driver-related improvements aimed at saving lives and preventing injuries."

National Transportation Policy safety goals include increasing safety belt use to 70 percent by 1992; decreasing the number and percentage of alcohol- and drug-related highway crashes and fatalities and decreasing the fatality rate on U.S. roads to 2.2 deaths per 100 million miles of travel.

"The good news is that the president's fatality rate goal has been met because more Americans have gotten the message about drunk driving," says Curry. "They are taking advantage of available safety devices, such as safety belts, air bags and child safety seats for youngsters. But far too many still ride unprotected, think warnings about drunk driving are meant for 'the other guy' and routinely ignore posted speed limits."

The National Transportation Policy includes these safety goals:

- Encourage all states to enact laws requiring use of safety belts and motorcycle helmets, and to strengthen laws against drunk and drugged driving;
- Conduct a coordinated national campaign to increase public awareness of traffic safety issues, promote improved driver training, achieve more effective driver licensing and driver records, build support for driver safety laws and change unsafe driving behavior;
- Target federal financial support and technical assistance to promoting more effective enforcement of laws and regulations governing speed limits, motor carrier safety, drunk and drugged driving, and use of safety belts, child safety seats and motorcycle helmets;
- Develop rules to require vehicle design improvements to increase occupant protection and improve vehicle crash avoidance capabilities and continue efforts to keep unsafe vehicles off the roads, through close monitoring and recalls of defective vehicles.

NHTSA Plans

According to Curry, NHTSA plans include:

- Considering new federal regulations to protect passengers in side impact crashes;
- Ensuring that light trucks, vans and utility vehicles have the same safety requirements as passenger cars;
- Improving the safety of child passengers;
- Providing improved occupant protection in roll-over crashes.

Specific NHTSA goals for the rest of 1990 will attempt to:

- Complete rule-making on passenger car side impact; automatic crash protection, static side impact and high mounted stop lights for light trucks; potential crash avoidance standards; newborn dummy child safety seats; child seat registration; mirrors, window retention, body joint strength, flammability and stop arms in school buses; and light truck fuel economy standards for 1992-4 models.
- Increase the number of states with prompt license suspension provisions from the present 34 to 37.
- Increase the number of states with drug evaluation classification from 23 to 30.
- Prepare guidelines for effective state programs on impaired driving.
- Work with the Network of Employers for Traffic Safety to implement drunk driving programs and increase safety belt use at 200 corporations.
- Promote the development and adoption of acceptable safety belt use survey methods by states.
- Increase the number of states with motorcycle helmet laws from the present 22 to 24.

FHWA Safety Goals

FHWA administrator Tom Larson says: "We will continue to emphasize highway safety through the correction of hazardous locations, rail-highway crossings, improved highway design, better construction, zone traffic control and increased enforcement of motor carrier driver and vehicle safety standards."

By reducing rail-highway crossings and roadside hazards, "we estimate that more than 24,000 fatalities and 525,000 injuries have been prevented since 1974, but more can be done," says Larson.

The FHWA is also accelerating the development of Intelligent Vehicle-Highway Systems which provide current road and traffic information to drivers.

FHWA and NHTSA are working closely with state and local governments on special programs in pedestrian safety; traffic law compliance; comprehensive highway corridor safety improvements; speed, drug and alcohol enforcement and safety construction.

"Motor carrier safety and the regulation of hazardous materials transportation are receiving increased attention," adds Larson. "Our motor carrier safety goals include: full implementation of the commercial drivers license program nationwide; elimination of alcohol and drug use by drivers and increased roadside inspections and motor carrier reviews."

Driver Registry Updated

Secretary of Transportation Samuel Skinner has announced that an improved National Driver Registry to help states keep track of problem drivers is now operational. NHTSA has published proposed regulations spelling out how states may participate in the program (Federal Register, April 4, 1990).

The registry has existed for more than 25 years, but it has been updated with a new computerized Problem Driver Pointer System (PDPS), which will allow officials in one state to quickly find out whether another state has taken adverse action against a driver's license applicant.

Under the system, when a person applies for a driver's license, Department of Motor Vehicle personnel contact the National Driver Registry to see if there is a "pointer" indicating that the applicant has had a problem in another state. If the employee finds a pointer, he or she can get a summary of the applicant's record from the reporting state immediately through the computer system.

A pilot study conducted in North Dakota, Ohio, Virginia and Washington in 1988 found that, in three months, the states made 545,000 inquiries resulting in more than 25,000 license denials. More than 80 percent of denials were made while the applicant was "at the counter."

Participating states are required to provide the NDR with information about anyone:

- Who was denied a license by the reporting state for cause.
- Whose license has been canceled, revoked or suspended.
- Who has been convicted of driving under the influence or impaired by alcohol or drugs; a violation connected with a fatal accident, reckless driving or racing on the highways; failure to aid or provide identification when involved in an accident which produces a fatality or personal injury; or perjury or knowingly making a false statement in connection with motor vehicle laws.

NHTSA officials believe the PDPS system is efficient because information on problem drivers is maintained by the states and is more up-to-date than it would be if the federal government had to maintain all the records.

The National Transportation Safety Board and Federal Highway Administration will be able to use the NDR in connection with accident investigations. The Federal Aviation Administration, Federal Railroad Administration and prospective employers of commercial drivers will be able to use the registry if a job applicant initiates the request for information.

Small Car Debate Continues

Sen. Richard Bryan (D-Nev.) has introduced and temporarily withdrawn a bill which would require significantly higher fuel economy standards for American vehicles. But critics charge that the end result would be wider use of smaller — and more dangerous — cars.

Bryan's bill calls for new cars sold in the U.S. to get an average of 33 miles per gallon in 1995 and 40 mpg in 2001. The government now requires automakers to achieve an average of 27.5 miles per gallon for all cars they sell every year, a requirement known as the corporate average fuel economy (CAFE) standards.

Bryan initially offered his bill as an amendment to clean-air legislation now before Congress. But he withdrew the measure temporarily this month, one day after it came under attack from a coalition of auto companies and citizens' groups, including Robert L. Turner, vice president of the National Sheriffs Association.

John D. Graham, a professor at the Harvard School of Public Health, and Robert W. Crandall of the Brookings Institution, wrote in a 1989 report, "The Effect of Fuel Economy on Automobile Safety," that the average new car sold in the United States in 1989 weighed 1,000 pounds less than in 1978. They said lighter cars would result in more accidental deaths and predicted that lighter 1989 models alone will account for 3,900 additional traffic fatalities over the next 10 years.

A report by the Insurance Institute for Highway Safety says "the death rate in the smallest cars on the road is more than double the rate in the largest cars." STOP

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Transportation Safety Turns Aggressive

VISION '90s is the theme of the 1990 National Safety Council Congress and Exposition, to be held Oct. 28-Nov. 1 in Las Vegas.

"MOVING AMERICA: New Directions, New Opportunities" is the title of the National Transportation Policy recently announced by U.S. Department of Transportation Secretary Sam Skinner. Safety has taken a very high priority within this new transportation policy and will be highlighted throughout this year's Congress. More than 20 educational sessions will focus on a wide variety of important topics, including:

Highway Traffic Safety

A Blockbuster Session on the new "National Transportation Policy — Strategies for Action" is co-sponsored by the Council's Transport, Railroad, Marine and Public Employee Sections. "NETS: Network of Employers for Traffic Safety" will focus on protecting the employee who drives on the job.

A Specialty Session entitled "Tort Liability and Risk Management" will focus on governmental agencies responsible for providing transportation services and the liability of those agencies. The unique safety needs of "Pedestrians and Older Drivers" will be the subject of another specialty session, as will OSHA's "Proposed Requirements for Occupant Restraint Usage and Driver Training."

"Drugs in the Workplace: Occupational Hazard? — Lessons from Transportation Safety" will focus on a major issue in transportation which is applicable to all industries concerned with employee drug use.

"Innovations in Traffic Records Technology" will look at state-of-the-art technology available to meet new demands for data on motor vehicle crashes, both on- and off-the-job.

"Work Zone Safety" will report on a growing problem within the highway construction industry. The latest advances in work zone technology will be discussed at this session.

Driver Improvement

The Driver Improvement Department will sponsor "The Defense Driving Course — Attitudinal Dynamics of Driving (DDC-ADD)." The course is designed for problem drivers, drivers who have received numerous tickets and drivers who have had multiple collisions.

"DDC Prepares You for CDL" will highlight the requirements of the Commercial Motor Vehicle Safety Act and explain how DDC can help drivers meet its requirements.

"DDC. . .It's More Than You Think" will provide an overview and synopsis of each Driver Improvement Course along with a review of the appropriate audiovisuals. The new FLI Municipal Services program that deals with the needs of law enforcement, emergency medical and highway maintenance vehicle operators will also be introduced.

Motor Transportation

The Motor Transportation Division's Blockbuster, co-sponsored by the Commercial Vehicle, Fleet Administrator, School Transportation, and Transit Sections, entitled "Implementation of CDL," will provide delegates the latest information on challenges encountered from various state representatives involved in early implementation of the Commercial Driver's Licetse.

OSHA is placing a high priority on basic fleet safety in industry since motor vehicle accidents are a leading cause of occupational fatalities and injuries. "Basic Fleet Administration Safety Program," a Blockbuster session sponsored by the Commercial Vehicle Section, will cover OSHA's posture on fleet safety and outline the basic elements of a fleet administrator's safety program.

Commercial Vehicles

"Media Relations in Crisis Situations" will be a valuable presentation on developing a program and policy for disseminating accident-related information to the media, and the legal ramifications of such material.

"Drug Testing — Regulations & Training" is a review of the latest government information on drug testing requirements. Attendees will receive training on drug abuse policy development and training. A Certificate of Completion will be provided to each attendee following the presentation.

School Transportation

"Liability for Failing to Adequately Train School Bus Drivers" will discuss the key elements of a thorough training program, such as retaining the proper documentation for future reference.

"Special Education Driver Training" discusses caring for special ex-

VISION '90s

National Safety Council Congress and Exposition
October 28-November 1, 1990
Las Vegas, Nevada

1990 REGISTRATION AND HOUSING FORM

Please photocopy forms and keep these instructions for your records.

REGISTRATION INFORMATION AND INSTRUCTIONS

Registration for the 1990 National Safety Council Congress & Exposition is simple. The following explains the Congress format. Once you have read this material, fill in the Registration section of the following form and return it along with the applicable fees to the National Safety Council Registration and Housing Office. Telephone registrations will not be accepted.

Types of Registration

Full Congress & Exposition entitles you to attend Congress sessions Sunday through Thursday, and the Exposition Monday through Wednesday.

One-Day Congress & Exposition entitles you to attend Congress sessions and the Exposition on either Monday, Tuesday or Wednesday. *You must indicate the applicable code for the day you plan to attend.*

Distributor. If you are a distributor of safety/health products or services, you can register as a distributor and attend the Exposition Monday through Wednesday. *Be sure to staple your business card to the registration form.*

One-Day Exposition entitles anyone to attend the Exposition on either Monday, Tuesday or Wednesday. *You must indicate the applicable code for the day you plan to attend.*

Student entitles any full time student to attend the Congress sessions Sunday through Thursday, and the Exposition Monday through Wednesday. *A copy of your student I.D. must be enclosed with your registration form.*

Spouses. If your spouse accompanies you and he/she is not a safety professional, a complimentary registration is available. Be sure to list his/her full name in the boxes at the top of the registration form.

Professional Development Seminars. Seventeen Professional Development Seminars (PDS) are offered this year. These seminars are held on Thursday or Friday and run from 9:00 a.m. until 4:00 p.m. **There is a separate charge for each seminar.** Upon completion, each participant will receive applicable CEU credits.

Early Registration Discount Fees

Attendees who register by September 28 are able to take advantage of the Early Registration Discount and save $10 to $80 on the regular fee. Following is a list of Early and Regular registration fees.

Registration		Early	Regular
Full Congress & Exposition	Member	$180	$230
	Nonmember	$240	$320
	Government	$180	$230
One-Day Congress & Exposition	Member	$110	$140
	Nonmember	$140	$170
Distributor		$ 50	$ 70
One-Day Exposition		$ 40	$ 50
Student		$ 40	$ 50
Professional Development Seminars	One-Day:		
	Member	$140	$190
	Nonmember	$190	$240
	Two-Day:		
	Member	$280	$360
	Nonmember	$360	$480

Fees Required with Registration

All registration fees must be received with the registration form. Do not FAX. Please make checks or money orders payable to National Safety Council/ITS.

Demographic Information

It is important that the demographic section of the registration form be completed by each participant. This information is gathered to help design a better Congress for all participants.

Attendance Policy

Young people under the age of 12 are not permitted to attend the Exposition, sessions, committee meetings or similar Congress activities. This restriction also applies to the setup and teardown days of the Exposition. Only one family member, spouse or child, may register free of charge for each fully-registered attendee. Therefore, any additional qualified family members must pay the applicable registration fee.

Individuals under the age of 12 are welcome to participate in the open social activities such as the tour program and Congress Night Out if accompanied by a parent or adult. Proof of age may be required. The National Safety Council reserves the right to deny admittance to any individual thought to be under the required age.

The Council imposes these restrictions in deference to speakers and attendees who seek to exchange the latest in safety and health information and products. The Congress and Exposition provides a business purpose and is not generally considered an area appropriate for children.

Video Taping and Audio Recording Policy

Video Taping

Due to the intricate and often sensitive technical material, and additionally, as a courtesy to the speakers and audience, video taping is expressly prohibited in any Congress education session, committee meeting or other function. This restriction also applies to the Exposition.

Audio Taping

Audio taping by personal hand-held recorders not tied into the sound system of the meeting room is only permitted when in compliance with the following restrictions:

The request must be submitted in writing to the Convention Department prior to the start of Congress. If approved by all parties concerned, written approval will be issued. Such approval must be brought to the session, meeting or exhibit hall and submitted to the Council staff representative present.

The recorded material is limited to personal use and may not be distributed to anyone else or further duplicated in any fashion.

Failure to comply with these policies automatically cancels the registration and right to participate. In such case, refunds will not be issued.

No Smoking Policy

Areas adjacent to the Exposition floor will be designated for smoking. Otherwise, it is Council policy that smoking is prohibited at all Congress activities (includes Exposition, Sessions, Committees).

Badge Returned by Mail

A confirmation will be sent to each participant. If you register by September 28, your Congress identification badge will be mailed to you at the address listed on the registration form. Registrations received after September 28, require that the attendee pick up his/her badge on-site at the Late Advance Registration Area.

Cancellation Policy

Cancellation requests must be sent in writing to the Registration and Housing Bureau of the National Safety Council. A $25.00 processing fee will be incurred on cancellations received by September 28. No refund will be issued on cancellations received after September 28. *Telephone cancellations will not be accepted.* Refunds will not be issued until after Congress regardless of when they were requested.

On-Site Registration

On-Site registration will be available as follows:

Las Vegas Convention Center

Saturday	October 27	8:00 am-4:30 pm
Sunday	October 28	8:00 am-4:30 pm
Monday	October 29	7:00 am-4:30 pm
Tuesday	October 30	7:00 am-4:30 pm
Wednesday	October 31	7:00 am-2:00 pm

See reverse side for Hotel Reservation Information

VISION '90s

National Safety Council Congress and Exposition
October 28-November 1, 1990
Las Vegas, Nevada

1990 Registration and Housing Form

I. TYPE OR PRINT VERY CAREFULLY

Name _____ (First) _____ (Last)

Title _____

Organization _____

Address _____

City _____ State _____ Zip _____

Province _____ Country _____ Postal Code _____

Phone _____ FAX _____

Check One: ☐ National Safety Council Member (Customer Number _____) ☐ Non-member

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II. ATTENDEE INFORMATION: MUST BE COMPLETED FOR PROPER REGISTRATION

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NUMBER OF EMPLOYEES

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- ☐ S 250-499
- ☐ T 500-999
- ☐ U 1,000-4,999
- ☐ V 5,000 or more

IS THIS YOUR FIRST CONGRESS?

- ☐ 72 Yes
- ☐ 73 No

STANDARD INDUSTRIAL CLASSIFICATION (Primary)

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- ☐ 45 Air Transportation
- ☐ 79 Amusement & Recreation
- ☐ 23 Apparel
- ☐ 28 Chemicals
- ☐ 48 Communications
- ☐ 15 Construction
- ☐ 92.1 Courts
- ☐ 82 Education
- ☐ 49 Electric/Gas/Sanitary Services
- ☐ 36 Electronic Equipment
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- ☐ 08 Forestry
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- ☐ 99.3 Traffic Safety
- ☐ 41 Transit Properties
- ☐ 42 Trucking
- ☐ 44 Water Transportation
- ☐ 99 Other _____ (please specify)

MAJOR JOB FUNCTION (Check one)

- ☐ 18 Buyer/Purchasing Agent
- ☐ 19 Claims/Insurance/Risk Managers
- ☐ 43 Environmental Technical/Hazardous Waste/Industrial Hygienist
- ☐ 44 Fire Protection
- ☐ 45 Fleet Safety
- ☐ 52 Industrial/Labor Relations Manager
- ☐ 53 Law Enforcement Officer/Administrator
- ☐ 55 Loss Control Consultant
- ☐ 56 Maintenance/Operations/Production Manager
- ☐ 57 Medical Service/Occupational Health Director
- ☐ 60 Personnel Services
- ☐ 61 Product Safety
- ☐ 62 Recreation Manager
- ☐ 69 Safety and Health Administrator/Director/Engineer/Officers/Manager/Specialists/Supervisor/Coordinator
- ☐ 71 Safety Trainer/College Instructor/Vocational Educator/Curriculum Specialist
- ☐ 72 State FFA/4-H Leaders
- ☐ 73 Street/Highway Department Supervisors
- ☐ 74 Students

III. REGISTRATION CATEGORIES

Note Early-Bird Discounts

	Advance	After September 28
Full Congress and Exposition		
01 Member (90102)	$180	$230
02 Nonmember (90102)	$240	$320
18 Government Employee (90435)	$180	$230
One-Day Congress and Exposition		
Member (90108)		
03 Monday 05 Tuesday 07 Wednesday	$110	$140
Nonmember (90108)		
04 Monday 06 Tuesday 08 Wednesday	$140	$170
09 Distributor (90114)	$ 50	$ 70
One-Day Exposition Only (90122)		
10 Monday 11 Tuesday 12 Wednesday	$ 40	$ 50
14 Student—I.D. Required (90118)	$ 40	$ 50

FEE PAYMENT

	Code	Amount
III. Registration (See neighboring information)	_____	$_____
IV. Special Events (Transfer from reverse side)	_____	$_____
V. Professional Development Seminars (Transfer from reverse side)	_____	$_____
VI. Hotel Deposit (Government Purchase Orders not accepted)	_____	$_____
Grand Total	_____	$_____

RETURN FORM AND FULL PAYMENT OR GOVERNMENT PURCHASE ORDER TO:

Do *not* send via FAX.

National Safety Council Registration and Housing
c/o ITS 104 Wilmot Road, Suite 300
P.O. Box 825
Deerfield, IL 60015

F

Money orders or company/personal checks should be made payable to National Safety Council/ITS.

ADMISSION BY BADGE ONLY TO ALL CONGRESS SESSIONS & EXPOSITION

IV. SPECIAL EVENTS

Check items for each registrant and transfer codes and fees to reverse side. Tickets will be issued for items indicated.

		Ticket Quantity
01	Inter-faith Prayer Breakfast (90198)	_____ x $10 each
02	Congress Night Out—To Be Announced	_____ x $_____ each

V. PROFESSIONAL DEVELOPMENT SEMINARS

Note Early Bird Discounts

Check all seminars for each registrant and transfer codes and fees to reverse side. Tickets will be issued for admission and must be turned in to obtain continuing education credit. Sign up for 1 seminar per day.

	Advance	After September 28
One Day—Member	$140	$190
Nonmember	$190	$240
Two Day—Member	$280	$360
Nonmember	$360	$480

ONE-DAY SEMINARS Thursday, November 1, 9:00 a.m.-4:00 p.m.

	Community Topics	Amount
01	Beyond Behavior Modification: What's New in Safety Motivation (90429)	_____
02	Liability Loss Control for the Public Employer (90431)	_____
	Occupational Topics	
03	Practical Ergonomics in the Workplace (90148)	_____
04	Training Concepts for the Safety Trainer—Part I (90154)	_____
05	Selling Safety to Management (90166)	_____
06	You and Systems Safety (90145)	_____
07	Hazardous Waste Management (90401)	_____
08	Confined Space Awareness (90423)	_____
09	Compliance with the OSHA Lockout/Tagout Standard (90433)	_____

Friday, November 2, 9:00 a.m.-4:00 p.m.

	Occupational Topics	
10	The Back Injury: Prevention and Control (90158)	_____
11	Training Concepts for the Safety Trainer—Part II (90403)	_____
12	The Saf-T-Tree (90405)	_____
13	Accident Analysis (90152)	_____
14	Quality Listening (90425)	_____
15	Educating Management in the Principles of Accident Prevention (90427)	_____

TWO-DAY SEMINARS

Thursday and Friday, November 1-2, 9:00 a.m.-4:00 p.m.

16	Hazardous Material Transportation (90417)	_____
17	Applied Ergonomics (90421)	_____
	Per Person Total	$_____

VI. HOTEL RESERVATIONS

Use hotel codes and rates found on the Hotel Reservation Information and Instructions page, and complete all 4 choices:

Dates	Arrival Day and Date	Departure Day and Date	
1st Choice Hotel	2nd Choice	3rd Choice	4th Choice

Hotel Choice
Based On: ☐ Rate ☐ Location ☐ Hotel

Type of Accommodations ☐ Single—1 person, 1 bed ☐ Double—2 persons, 1 bed ☐ Twin—2 persons, 2 beds
☐ Suite, Parlor + 1 bedroom ☐ Suite, Parlor + 2 bedrooms

Room Rate Requested $_____

Rooming with _____

Special Requests—Check all that apply:
☐ No Smoking Room if available
☐ Handicap Accessible Room
☐ Other _____

Room Deposit Required:

1 Room—Single/Double	$100
Suite—Parlor + 1 bedroom	$300
Suite—Parlor + 2 bedrooms	$400

Return this form and payment to:

National Safety Council Registration and Housing
c/o ITS 104 Wilmot Road, Suite 300
P.O. Box 825, Deerfield, IL 60015

Do not send via Fax. **Money orders or company/personal checks should be made payable to National Safety Council/ITS.**

ceptionalities, the growth of the medically fragile population and the liabilities of special education.

Techniques drivers can use to manage student discipline and incentives for encouraging safe behavior on a school bus, as well as disciplinary action if students misbehave, will be discussed in "Innovative Ways of Ridership Management."

Mass Transit

"Mandatory Drug Test Update" is a two-part program covering operator drug testing. The first presentation will contain information from the Urban Mass Transit Administration, while the second portion of the program will present current information from the field.

Recent natural disasters have made it very apparent that every transit property needs to prepare and plan for such events. "Mass Transit's Role in Disaster Planning" will explain how an effective plan can be prepared, based on the experiences of those who have dealt with such events.

"Vandalism/Operator Safety and Security" will discuss methods and procedures used by transit properties to reduce vandalism on transit coaches and bus shelters. Various security methods available to bus operators and the general public will be covered.

"Industrial Hygiene Concerns in Bus and Rail Shops" will describe the role of the industrial hygienist in the ever-changing area of transit safety. Examples of problems and their solutions by several transit properties that are familiar with bus and rail maintenance facilities will be offered.

"Structure/Role of a Safety Committee" will compare several transit properties, focusing on the organization and various personnel involved with their safety committees. The interaction of members, as well as the overall effectiveness of the safety committee, will be discussed by each representative.

"Computer Applications in Transit Safety" will describe various computer systems, programs and packages as they specifically relate to the transit industry. Conclusions on efficiency and effectiveness will be discussed, as well as comparisons of several transit properties.

LIBRARY

Urban Survivors

Accidents

Caldwell, L. H. "Hard Lessons," *Fire Command*, Batterymarch Park, Quincy, MA 02269. Vol. 57, No. 3, March 1990, pp. 20-21.

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Alcohol

Donovan, D. M., Umlauf, R. L., Salzberg, M., "Bad Drivers: Identifications of a Target Group for Alcohol-Related Prevention and Early Intervention," *Journal of Studies on Alcohol*, Rutgers University, New Brunswick, NJ 08903. Vol. 51, No. 2, March 1990, pp. 136-141.

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Tomich, G., "Retrofitting Fracture Critical Bridges," *Construction Specifier*, 601 Madison St., Alexandria, VA 22314. Vol. 43, No. 3, March 1990, pp. 62-67, 71-74.

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Haque, M. O., "Evaluation of the Demerit Points System in Deterring Traffic Offenses," *Evaluation Review*, 275 S. Beverly Dr., Beverly Hills, CA 90212. Vol. 14, No. 1, February 1990, pp. 22-41.

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Cooter, R. D., "Computed Tomography in the Assessment of Protective Helmet Deformation," *Journal of Trauma*, 428 E. Preston St., Baltimore 21202. Vol. 30, No. 1, January 1990, pp. 55-68.

Highways

Humphrey, N., "Access for Large Trucks," *TR News*, 2101 Constitution Ave., N.W., Washington, DC 20418. No. 146, January/February 1990, pp. 6-9.

Inspections

Cross, R., "Annual Inspection: The Final Chapter," *Commercial Carrier Journal*, Chilton Way, Radnor, PA 19089. Vol. 147, No. 2, February 1990, pp. 46-47, 50.

Motor Transportation

Beilock, R., *RCCC Motor Carrier Safety Survey, 1989*. 1990. Regular Common Carrier Conference, 2200 Mill Rd., Alexandria, VA 22314-4677. 54 pp.

Motor Vehicles

"Car Safety: Size Counts," *Consumers' Research*, 517 2nd St., N.E., Washington, DC 20002. Vol. 73, No. 3, March 1990, pp. 27-29.

Pedestrians

Stoke, C. B., Kelly, V. M., *The Pedestrian in the Transportation System: Legislation for Improved Traffic Safety*. January 1990. Virginia Transportation Research Council, Box 3817 University Station, Charlottesville, VA 22903-0817. 38 pp.

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Benito, M. C., Farcia, F. F., Quero, L. F., "Lesion of the Internal Carotid Artery Caused by a Car Safety Belt," *Journal of Trauma*, 428 E. Preston St., Baltimore, MD 21202. Vol. 30, No. 1, January 1990, pp. 116-117.

School Buses

Levine, L., "Conference Will Consider Reflective Bus Markings," *School Bus Fleet*, 2512 Artesia Boulevard, Redondo Beach, CA 90278-3296. Vol. 36, No. 1, February/March 1990. pp. 18, 21-23.

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Bisset, K., "Signaling for Efficiency," *Railway Age*, 345 Hudson St., New York 10014. Vol. 191, No. 2, February 1990, pp. 39-40.

Waight, V. H., "Backup Power for Traffic Signals," *ITE Journal*, 525 School St., N.W., Ste. 410, Washington, DC 20024. Vol. 60, No. 3, March 1990, pp. 45-46.

Speeds & Speeding

Womble, J. E., "Neighborhood Speed Watch: Another Weapon in the Residential Speed Control Arsenal," *ITE Journal*, 525 School St., N.W., Ste. 410, Washington, DC 20024. Vol. 60, No. 2, February 1990, pp. 16-17.

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Please Note: Library *is prepared by the National Safety Council Library — Robert Marecek, manager. The National Safety Council Library is unable to supply any of the materials listed here. For your convenience, the names and addresses of the publishers are listed.*

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February Traffic Deaths Up 4%

BY MARY E. JOHNSTON and URSULA ZUEHLKE

TRAFFIC SUMMARY

Month	Deaths 1990	Deaths 1989	Change
February	3,290	3,150	+ 4%
2 months	6,770	6,680	+ 1%
12 months (Ending February, 1990)	47,090	49,060	– 4%

Motor-vehicle deaths in February totaled 3,290, an increase of 4 percent from the February 1989 total of 3,150.

Deaths for the two-month period ending February totaled 6,770, a 1 percent increase over the 1989 two-month total of 6,680.

Disabling injuries for 1990 are estimated to be almost 244,000. These are injuries resulting in disability beyond the day of the accident, and do not include minor injuries, which probably totaled as many more.

The cost of motor-vehicle accidents for 1990 is estimated at almost $10 billion.

Based on preliminary vehicle mileage reports for this year, the estimated mileage death rate for the entire year is 2.3 (deaths per 100 million vehicle miles).

State Experience

Among the 48 states reporting February experience, 21 states and the District of Columbia had fewer deaths than in the preceding February, and 26 states showed increases in deaths. One state showed no change in the number of fatalities. For the two-month period, 20 states and the District of Columbia showed decreases in the number of deaths, while 26 states showed increases. Two states recorded the same number of deaths both years.

Maine	–53%
New Mexico	–43%
Nebraska	–41%
Vermont	–39%
New Hampshire	–35%
Mississippi	–32%
Arkansas	–29%
West Virginia	–27%
Michigan	–25%
South Dakota	–17%
California	–15%
New York	–14%
Florida	–11%
Rhode Island	–11%
Wisconsin	–11%
Connecticut	– 9%
Indiana	– 9%
Illinois	– 8%
New Jersey	– 7%
South Carolina	– 4%

Traffic Deaths by State

Deaths are reported by state traffic authorities. All figures are preliminary. To ensure proper comparisons, 1988 and 1989 figures cover the same reporting period as those for 1990.

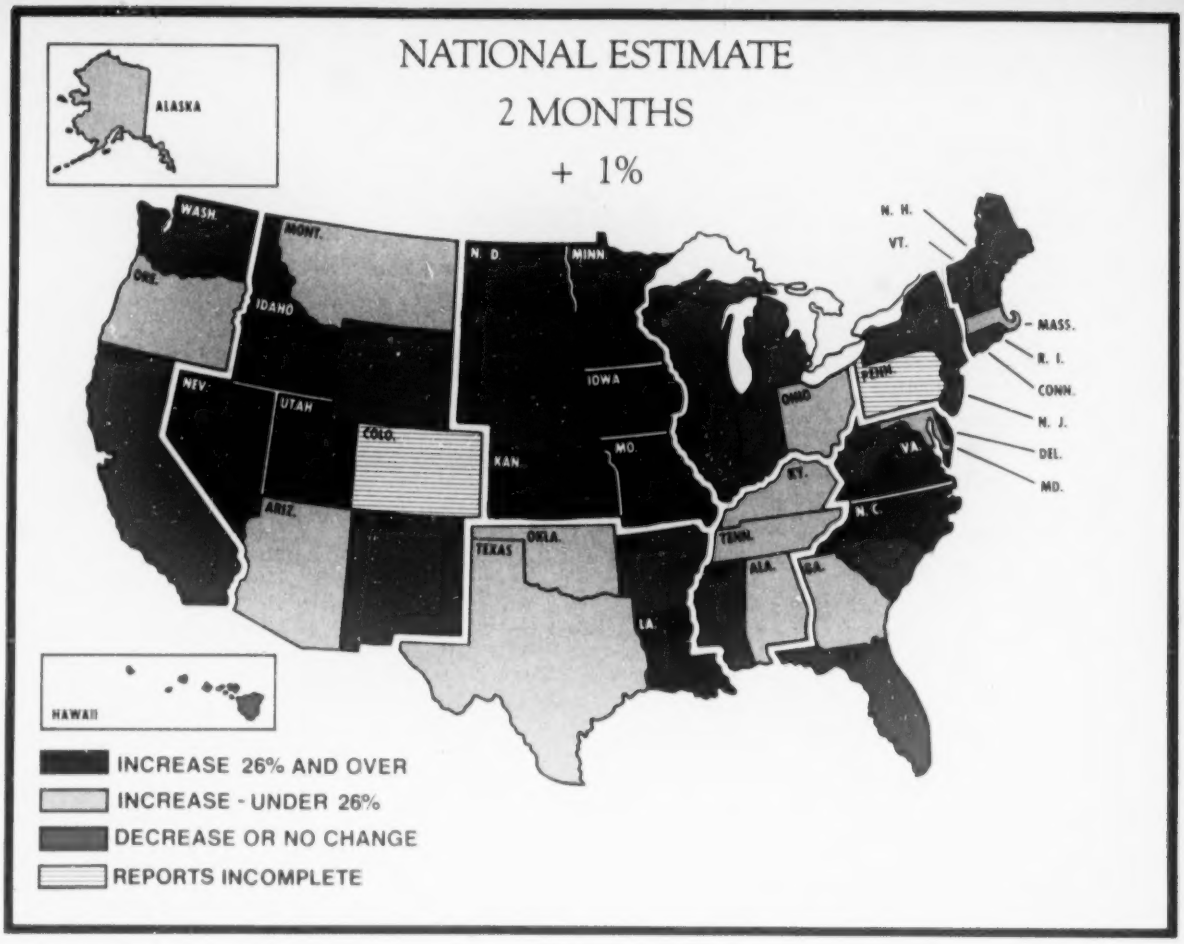
Population Rate: U.S. population rate and state population rates are the estimated annual number of deaths per 100,000 population. U.S. population rate is based on July 1, 1990, population estimate; and state population rates are based on July 1, 1989, population estimates, U.S. Bureau of the Census, Washington, D.C.

States shown in CAPS had fewer deaths in 1990 than they did in 1989 for the same reporting period.

Mileage Rate: The number of deaths per 100 million vehicle miles of travel.

STATE	NO. OF MOS.	DEATHS IDENTICAL PERIODS 1990	1989	1988	PERCENT CHANGES 1989 TO 1990	1988 TO 1990	1990 POP. RATE	1990 MILE. RATE
Total U.S.	**2**	**6,770**	**6,680**	**6,520**	**+ 1%**	**+ 4%**	**19.0**	**2.3**
Alabama	2	145	128	112	+ 13%	+ 29%	21.1	2.0
Alaska	2	11	9	10	+ 22%	+ 10%	12.5	1.9
Arizona	2	100	94	104	+ 6%	- 4%	16.9	1.8
ARKANSAS	2	55	77	70	- 29%	- 21%	13.7	1.7
CALIFORNIA	2	611	723	671	- 15%	- 9%	12.6	1.4
Colorado	1	26	24	20	+ 8%	+ 30%	9.4	1.2
CONNECTICUT	2	51	56	57	- 9%	- 11%	9.4	1.2
Delaware	2	25	18	28	+ 39%	- 11%	22.3	2.3
D. OF C.	2	7	20	8	- 65%	- 13%	7.0	1.3
FLORIDA	2	455	513	513	- 11%	- 11%	21.5	2.6
Georgia	2	225	190	217	+ 18%	+ 4%	21.0	2.0
Hawaii	2	21	21	26	0%	- 19%	11.3	1.5
Idaho	2	27	14	28	+ 93%	- 4%	16.0	1.9
ILLINOIS	2	200	218	240	- 8%	- 17%	10.3	1.5
INDIANA	2	114	125	142	- 9%	- 20%	12.2	1.3
Iowa	2	76	51	48	+ 49%	+ 58%	16.1	2.0
Kansas	2	69	51	58	+ 35%	+ 19%	16.5	2.0
Kentucky	2	131	125	104	+ 5%	+ 26%	21.1	2.4
Louisiana	2	125	95	105	+ 32%	+ 19%	17.1	2.1
MAINE	2	17	36	27	- 53%	- 37%	8.3	0.9
Maryland	2	97	89	104	+ 9%	- 7%	12.4	1.5
Massachusetts	2	90	78	61	+ 15%	+ 48%	9.1	1.3
MICHIGAN	2	176	235	212	- 25%	- 17%	11.4	1.3
Minnesota	2	68	54	60	+ 26%	+ 13%	9.4	1.1
MISSISSIPPI	2	74	109	93	- 32%	- 20%	16.9	2.0
Missouri	2	144	110	163	+ 31%	- 12%	16.7	1.9
Montana	2	18	17	17	+ 6%	+ 6%	13.4	1.4
NEBRASKA	2	24	41	31	- 41%	- 23%	8.9	1.1
Nevada	2	44	16	29	+175%	+ 52%	23.8	2.7
NEW HAMPSHIRE	2	20	31	19	- 35%	+ 5%	10.8	1.3
NEW JERSEY	2	131	141	169	- 7%	- 22%	10.2	1.3
NEW MEXICO	2	48	84	59	- 43%	- 19%	18.8	1.9
NEW YORK	2	232	271	236	- 14%	- 2%	7.8	1.3
North Carolina	2	283	177	165	+ 60%	+ 72%	25.8	2.9
North Dakota	2	10	4	10	+150%	0%	9.1	1.1
Ohio	2	193	191	198	+ 1%	- 3%	10.6	1.4
Oklahoma	2	95	85	51	+ 12%	+ 86%	17.7	1.8
Oregon	2	72	71	79	+ 1%	- 9%	15.3	1.7
Pennsylvania	1	121	124	111	- 2%	+ 9%	12.1	1.8
RHODE ISLAND	2	16	18	22	- 11%	- 27%	9.6	1.7
SOUTH CAROLINA	2	134	140	142	- 4%	- 6%	22.9	2.7
SOUTH DAKOTA	2	15	18	7	- 17%	+114%	12.6	1.4
Tennessee	2	142	140	147	+ 1%	- 3%	17.2	1.8
Texas	2	444	431	412	+ 3%	+ 8%	15.7	1.8
Utah	2	43	24	19	+ 79%	+126%	15.1	2.1
VERMONT	2	14	23	17	- 39%	- 18%	14.8	1.5
Virginia	2	158	114	115	+ 39%	+ 37%	15.5	1.6
Washington	2	105	61	74	+ 72%	+ 42%	13.2	1.4
WEST VIRGINIA	2	55	75	76	- 27%	- 28%	17.8	2.3
WISCONSIN	2	85	96	74	- 11%	+ 15%	10.5	1.2
Wyoming	2	9	9	9	0%	0%	11.4	1.0
Puerto Rico*	2	86	103	114	- 17%	- 25%	18.9	—
Virgin Islands*	2	3	4	5	- 25%	- 40%	32.4	—
— CANADIAN PROVINCES —								
Alberta	2	61	51	41	+ 20%	+ 49%	23.1	—
British Columbia	2	92	81	71	+ 14%	+ 30%	26.1	—

*Not included in the TOTAL U.S. death count or rates.



MOTOR-VEHICLE DEATHS AND CHANGES
TOTAL U.S.

	Deaths				Percentage Changes				
					Corresponding Month			4 Months Moving Avg. +	
Months	1987	1988	1989	1990	1988-1990	1988-1989	1989-1990	1988-1989	1989-1990
January	3,301	3,390	3,530	3,480	+ 3%		– 1%		– 4%
February	2,997	3,130	3,150	3,290	+ 5%		+ 4%		– 3%
2 Months	6,298	6,520	6,680	6,770	+ 4%		+ 1%		
March	3,517	3,600	3,620			+ 1%		+ 4%	
April	3,621	3,760	3,540			– 6%		– *%	
May	4,264	4,210	3,860			– 8%		– 4%	
June	4,279	4,320	4,080			– 6%		– 5%	
July	4,472	4,720	4,440			– 6%		– 6%	
August	4,815	4,550	4,330			– 5%		– 6%	
September	4,300	4,370	4,250			– 3%		– 5%	
October	4,535	4,520	4,330			– 4%		– 4%	
November	4,169	3,980	3,790			– 5%		– 4%	
December	4,020	4,350	4,080			– 6%		– 5%	
TOTAL	48,290	48,900	47,000	47,090 ‡		– 4%			

The 1987 figures are from the National Center for Health Statistics. The 1988, 1989 and 1990 figures are National Safety Council estimates.

+Four Months Moving Average is based on changes between the totals for four months instead of one month. For example, the February figure shows the change between the totals for November 1988 - February 1989 and November 1989 - February 1990, etc. Adding several months together tends to smooth out single-month changes which may be affected by differences in the number of weekends in a month from one year to the next, random variations, etc.

‡ Deaths for the 12-month period ending February 1990.

*Less than 0.5%.

CONFERENCE ANNOUNCEMENT

INFORMATION SYSTEMS FOR HIGHWAY SAFETY:

16th International Forum on Traffic Records Systems

JULY 16-19, 1990

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Mark your calendar now to attend the *only international conference on traffic records systems* at the Sheraton Bal Harbour Hotel. The traffic records forum is cooperatively organized and supported by 15 traffic safety agencies, offering you a variety of viewpoints and vital information. Don't be left out of any of these discussions!

The 16th International Forum will provide interesting perspectives on how information systems are vital to our understanding of some of the highway safety issues facing us today. It will also provide information on the newest technological advances being applied to records systems development to offer you a balanced overview of traffic records and information system development.

Whether you deal with city, county, state, or federal records systems, whether you design, manage or use traffic records systems, whatever the scope of your needs – or size of your department or budget, you'll take home valuable information from this forum.

Nearly every highway safety discipline (enforcement, engineering, research, program management and motor vehicle administration) requires TRAFFIC RECORDS for problem identification, project planning and program evaluation. That's why these special sessions will deal with such critical topics as:

- commercial driver laws
- occupant restraint useage analyses
- DUI studies
- accident location systems
- engineering issues such as construction zone accidents
- tort liability
- optical disk/optical scanning technology
- enforcement's use of new technology
- integrating court records into traffic records systems
- evaluation of 65 mph speed limit
- and development of EMS systems
- and some 60 or more interesting and educational subjects

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For more information – and to receive your registration packet, please complete the form below and mail it to the address indicated. Don't wait. Make your plans to attend TODAY!

Only those persons/organizations returning this form will receive additional information on this important forum.

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_____

ORGANIZATION _____

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444 N. Michigan Ave.
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I did some really quality networking today. This is definitely the place to meet the right people.
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